MITSUBISHI ELECTRIC

SPLIT-TYPE AIR CONDITIONERS

Changes for the Better

Revision G:
- Errors in TROUBLESHOOTING have been corrected.

Please void OB455 REVISED EDITION-F.

OUTDOOR UNIT
SERVICE MANUAL

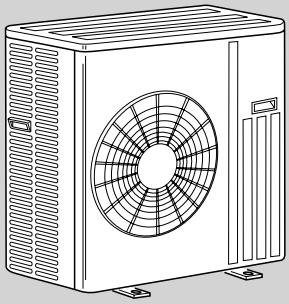
HFC utilized
R410A

No. OB455
REVISED EDITION-G

Models

MUZ-GB50VA - E1
MUZ-GB50VA - E2
MUZ-GB50VA - E3

Indoor unit service manual
MSZ-GB·VA Series (OB454)



CONTENTS

1. TECHNICAL CHANGES 3
2. PART NAMES AND FUNCTIONS 4
3. SPECIFICATION 4
4. NOIS CRITERIA CURVES 6
5. OUTLINES AND DIMENSIONS 6
6. WIRING DIAGRAM 7
7. REFRIGERANT SYSTEM DIAGRAM 9
8. PERFORMANCE CURVES 11
9. ACTUATOR CONTROL 16
10. SERVICE FUNCTIONS 17
11. TROUBLESHOOTING 18
12. DISASSEMBLY INSTRUCTIONS 44
13. RoHS PARTS LIST 48

NOTE:
- This service manual describes technical data of the outdoor units.

CE

Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.
Correct refrigerant is specified in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Revision A:

• Compressor has been changed.

	Model	RoHS PARTS LIST number
Previous	SNB130FLDH	E12 851 900
New	SNB130FLDH1	E12 939 900

Revision B:

• REFRIGERANT SYSTEM DIAGRAM has been changed.
  • Oil separator has been added.
  • Capillary tube has been added. (ø1.8 × ø0.6 × 1000)
• MUZ-GB50VA-E2 has been added.
• Check of outdoor thermistors (10-6.Ⓑ) has been corrected.

Revision C:

• RoHS PARTS LIST has been changed.

Revision D:

• RoHS PARTS LIST has been changed.

Revision E:

• MUZ-GB50VA-E3 has been added.

Revision F:

• The fan guard for MUZ-GB50VA-E1, E2, E3 has been changed.

Revision G:

• Errors in TROUBLESHOOTING have been corrected.

1 TECHNICAL CHANGES

MUZ-GA50VA -E1 ➜ MUZ-GB50VA -E1

1. Refrigerant filling capacity has been changed.
2. Outdoor electronic control P.C. board has been changed.

MUZ-GB50VA -E1 ➜ MUZ-GB50VA -E2

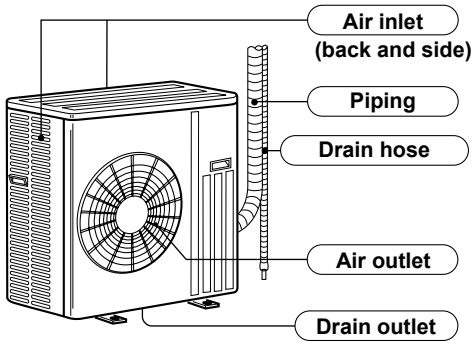
1. Compressor has been changed. (SNB130FLDH1 ➜ SNB130FLEH1)
2. Outdoor electronic control P.C. board has been changed.

MUZ-GB50VA -E2 ➜ MUZ-GB50VA -E3

1. Compressor has been changed. (SNB130FLEH1 ➜ SNB130FGBH)
2. Outdoor electrical parts have been changed.
3. Refrigerant circuit has been changed.

2 PART NAMES AND FUNCTIONS

MUZ-GB50VA



ACCESSORIES

①	Drain socket	1
②	Drain cap ø33	2

3 SPECIFICATION

Outdoor model				MUZ-GB50VA	
Function				Cooling	Heating
Power supply				Single phase 230 V, 50 Hz	
Capacity Rated frequency (Min.-Max.)			kW	5.0 (0.9-5.8)	5.8 (0.9-7.8)
Electrical data	Breaker capacity		A	20	
	Running current ✻1		A	7.23	7.43
	Power input ✻1		W	1,610	1,660
	Power factor ✻1		%	97	
	Starting current ✻1		A	7.46	
Coefficient of performance (C.O.P) ✻1				3.03	3.41
Compressor	Model	E1		SNB130FLDH or SNB130FLDH1	
		E2		SNB130FLEH1	
		E3		SNB130FGBH	
	Output	E1, E2	W	850	
		E3		900	
	Compressor motor current ✻1		A	6.91	7.11
Fan motor	Model			RC0J60-AA	
	Current ✻1		A	0.32	
Dimensions W × H × D			mm	840 × 850 × 330	
Weight			kg	53	
Dehumidification			ℓ/h	2.2	—
Air flow ✻1 (High/Low)			m^3/h	2,940/1,650	2,940/2,210
Special remarks	Sound level ✻1 (High/Low)		dB(A)	52/51	55/53
	Fan speed (High/Low)		rpm	800/480	800/620
	Fan speed regulator			2	
	Refrigerant filling capacity (R410A)		kg	1.50	
	Refrigeration oil (Model)			NEO22	

NOTE : Test conditions are based on ISO 5151.

Cooling :	Indoor	Dry-bulb temperature 27°C	Wet-bulb temperature 19°C
	Outdoor	Dry-bulb temperature 35°C	Wet-bulb temperature 24°C
Heating :	Indoor	Dry-bulb temperature 20°C	Wet-bulb temperature 15°C
	Outdoor	Dry-bulb temperature 7°C	Wet-bulb temperature 6°C

Refrigerant piping length (one way) : 5 m

✻1 Measured under rated operating frequency.

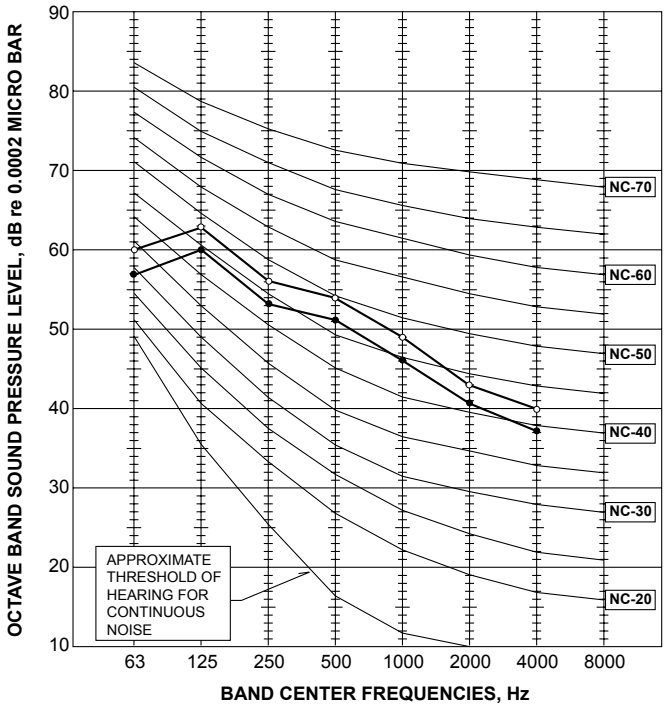
Specifications and rated conditions of main electric parts

Item \ Model		MUZ-GB50VA- E1 MUZ-GB50VA- E2
Current transformer	(CT1,2)	20 A
	(CT61)	20 A
Smoothing capacitor	(CB1,2,3)	560 µF 450 V
Fuse	(F64)	250 V 2 A
	(F801)	250 V 3.15 A
	(F911)	250 V 1 A
Expansion valve coil	(LEV)	DC 12 V
Intelligent power module	(IPM)	15 A 600 V
	(HC930)	3 A 600 V
Reactor	(L)	340 µH 20 A
Power factor controller	(PFC)	20 A 600 V
Resistor	(R64A,B)	10 Ω 10 W
	(R937A,B)	1.1 Ω 2 W 2%
	(RS1~4)	0.04 Ω 7 W
Solenoid coil relay	(SSR61)	0.5 A 600 V
Terminal block	(TB1,TB2)	3 P
Relay	(X64)	20 A 250 V
R.V. coil	(21S4)	AC 220 - 240 V

Item \ Model		MUZ-GB50VA- E3
Current transformer	(CT)	20 A
	(CT761, CT781)	15 A
Smoothing capacitor	(C61, C62, C63)	620 µF 420 V
Diode module	(DB61)	25 A 600 V
	(DB65)	25 A 600 V
Fuse	(F61)	T20AL250V
	(F701, F801, F901)	T3.15AL250V
Intelligent power module	(IPM)	20 A 600 V
Expansion valve coil	(LEV)	DC 12 V
Reactor	(L61)	23.0 mH
Current-detecting resistor	(R61, R62)	180 mΩ 5 W (2 elements)
	(R825)	25 mΩ 5 W
	(R937A, R937B)	1.1 Ω 2 W
Current-limiting PTC thermistor	(PTC64, PTC65)	33 Ω
Terminal block	(TB1, TB2)	3 P
Relay	(X63)	3 A 250 V
	(X64)	20 A 250 V
R.V. coil	(21S4)	AC 220 - 240 V
IGBT	(TR821)	30 A 600 V

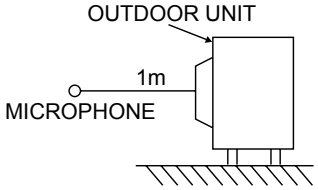
4 NOISE CRITERIA CURVES

MUZ-GB50VA



FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	52	●——●
	HEATING	55	○——○

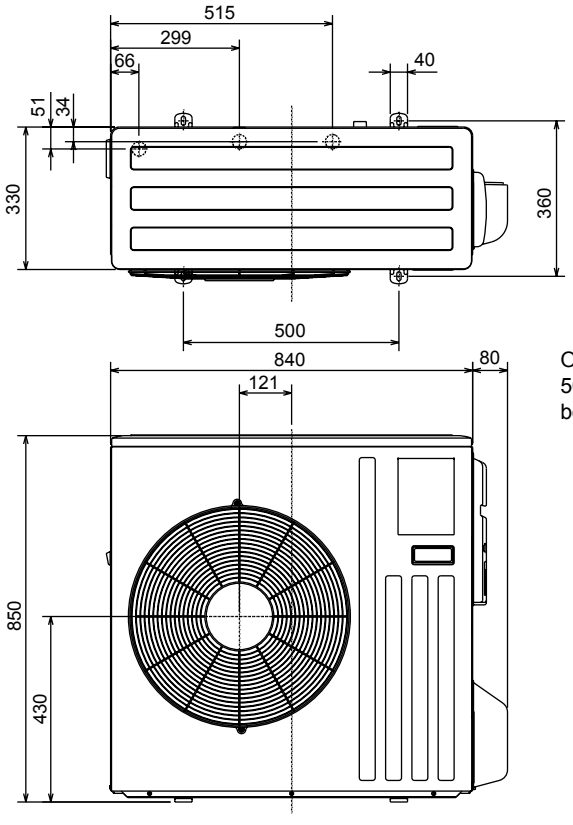
Test conditions
Cooling : Dry-bulb temperature 35°C
Wet-bulb temperature (24°C)
Heating : Dry-bulb temperature 7°C
Wet-bulb temperature 6°C

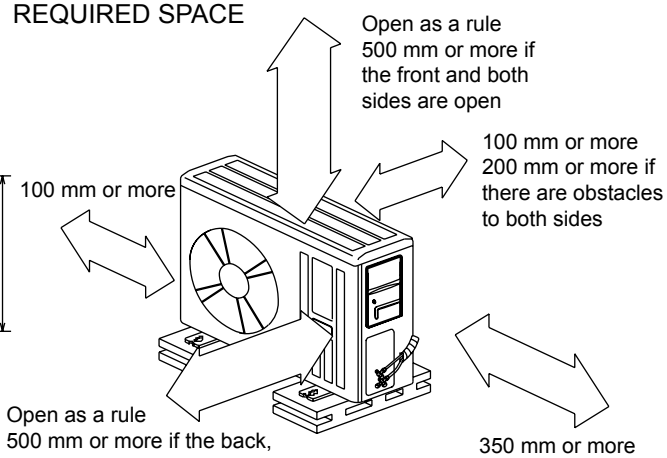


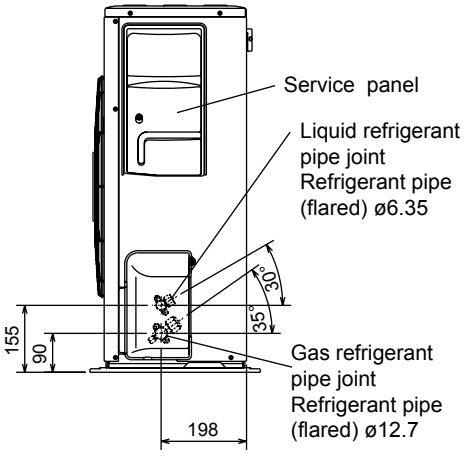
5 OUTLINES AND DIMENSIONS

MUZ-GB50VA

Unit: mm

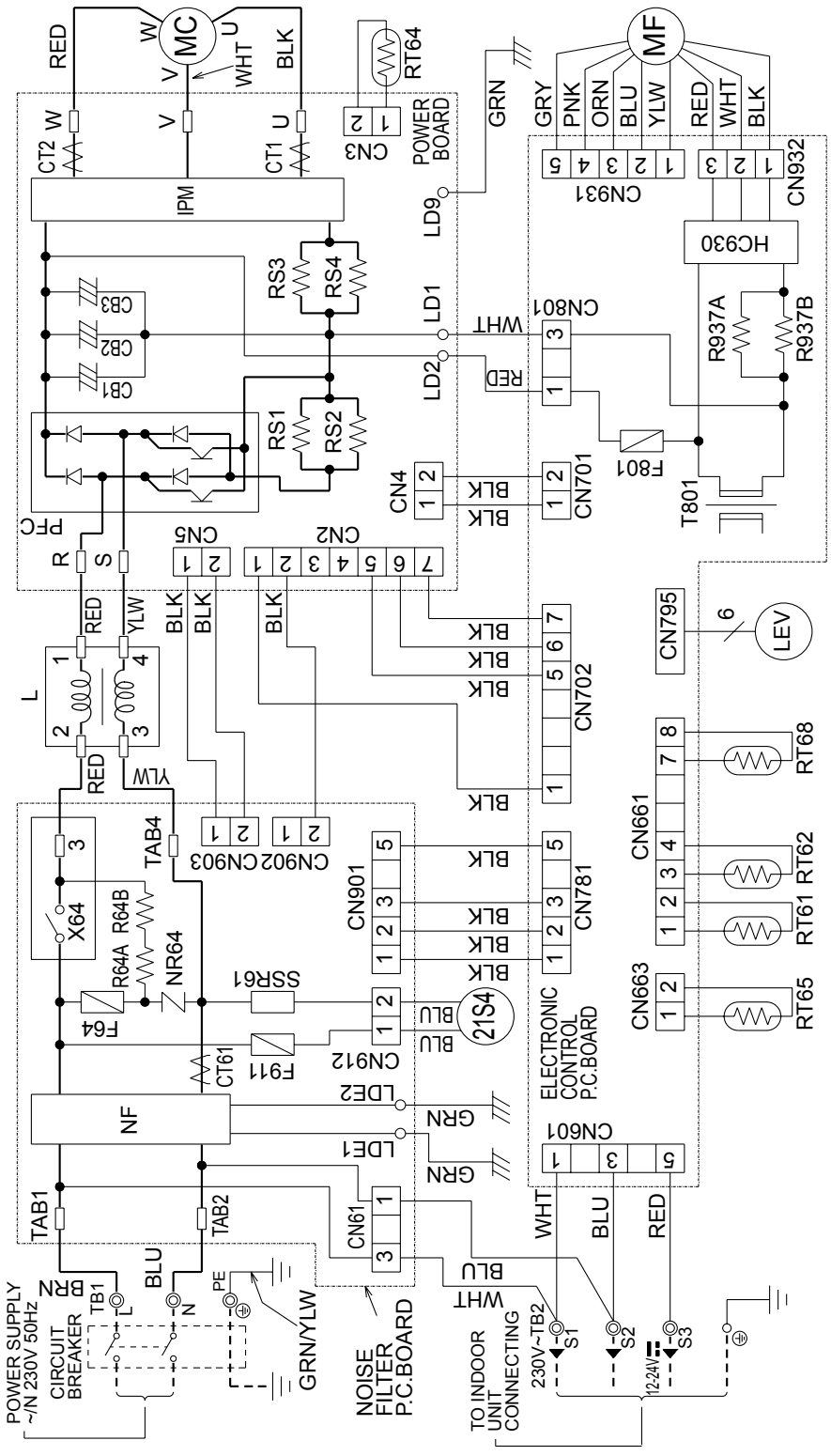



REQUIRED SPACE
Open as a rule
500 mm or more if
the front and both
sides are open
100 mm or more
100 mm or more
200 mm or more if
there are obstacles
to both sides
Open as a rule
500 mm or more if the back,
both sides and top are open
350 mm or more



6 WIRING DIAGRAM

MUZ-GB50VA- E1
MUZ-GB50VA- E2



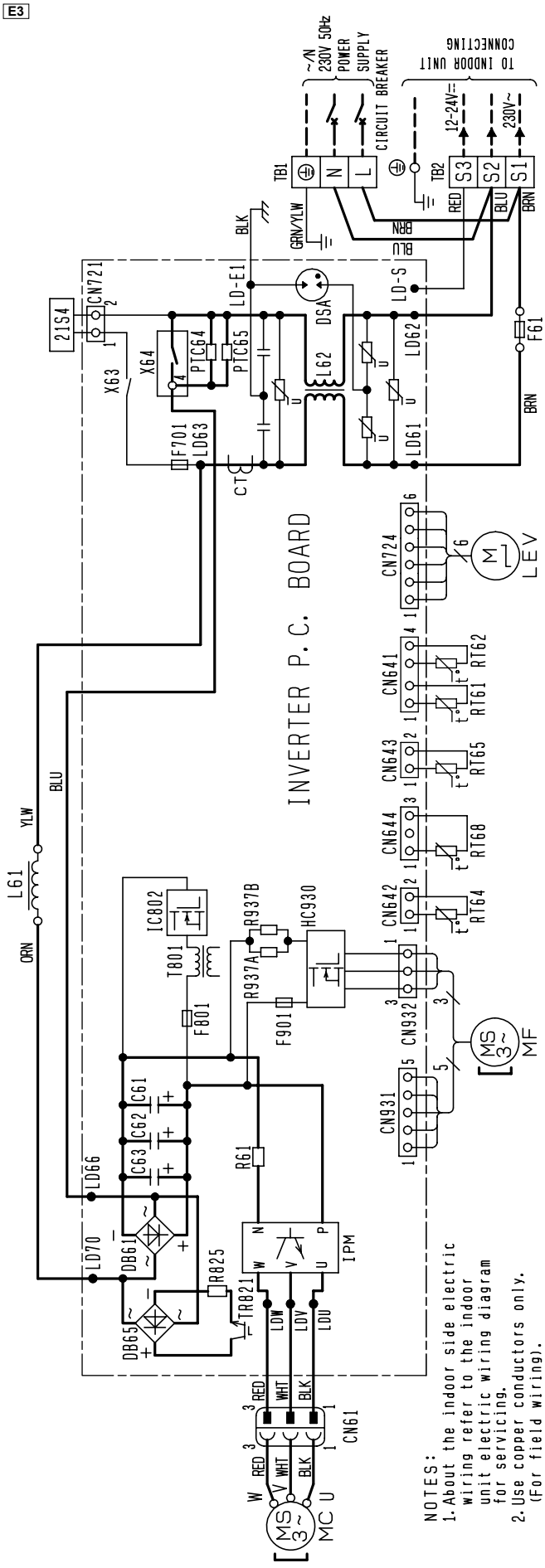
NOTES: 1.About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2.Use copper conductors only (for field wirin
3.Symbols below indicate.
◎:Terminal block □□□:Connector

SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
CT1, 2	CURRENT TRANSFORMER
CT61	CURRENT TRANSFORMER
F64	FUSE (T2AL 250V)
F801	FUSE (T3.15AL 250V)
F911	FUSE (T1AL 250V)
HC930	INTELLIGENT POWER MODULE
IPM	INTELLIGENT POWER MODULE
L	REACTOR
LEV	EXPANSION VALVE COIL

SYMBOL	NAME
MC	COMPRESSOR
MF	OUTDOOR FAN MOTOR
NF	NOISE FILTER
NR64	VARISTOR
PFC	POWER FACTOR CONTROLLER
R64A,B	RESISTOR
R937A, B	RESISTOR
RS1~4	RESISTOR
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMPERATURE THERMISTOR

SYMBOL	NAME
RT64	FIN TEMPERATURE THERMISTOR
RT65	AMBIENT TEMPERATURE THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR
SSR61	SOLENOID COIL RELAY
T801	TRANSFORMER
TB1	TERMINAL BLOCK
TB2	TERMINAL BLOCK
X64	RELAY
21S4	R.V. COIL

MUZ-GB50VA- E3



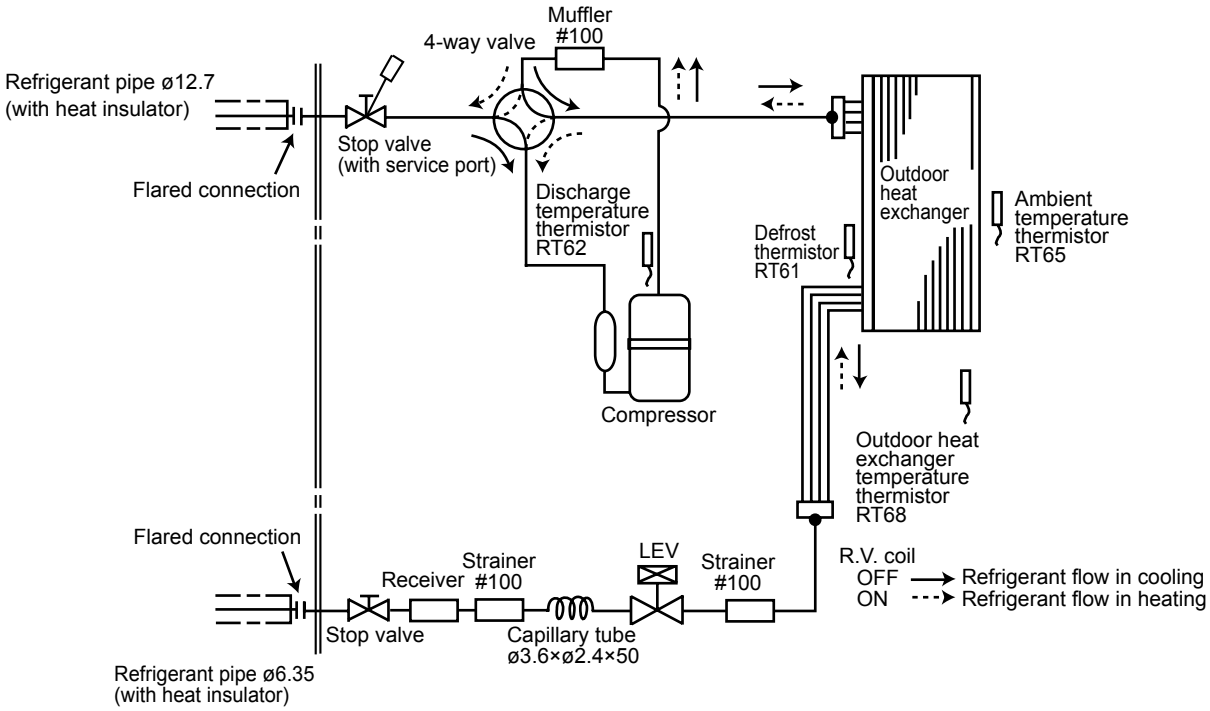
NOTES:
1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only. (For field wiring).

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CT	CURRENT TRANSFORMER	LEV	EXPANSION VALVE COIL	R61	CURRENT-DETECTING RESISTOR
C61, C62, C63	SMOOTHING CAPACITOR	MC	COMPRESSOR	R825	CURRENT-DETECTING RESISTOR
DB61, DB65	DIODE MODULE	MF	FAN MOTOR	R937A, R937B	CURRENT-DETECTING RESISTOR
DSA	SURGE ABSORBER	PTC64, PTC65	CIRCUIT PROTECTION	TB1, TB2	TERMINAL BLOCK
F61	FUSE (T20AL250V)	RT61	DEFROST THERMISTOR	TR821	SWITCHING POWER TRANSISTOR
F701, F801, F901	FUSE (T3.15AL250V)	RT62	DISCHARGE TEMP. THERMISTOR	T801	TRANSFORMER
HC930, IPM	INTELLIGENT POWER MODULE	RT64	FIN TEMP. THERMISTOR	X63, X64	RELAY
IC802	INTELLIGENT POWER DEVICE	RT65	AMBIENT TEMP. THERMISTOR	21S4	REVERSING VALVE COIL
L61	REACTOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR.		
L62	CMC COIL				

7 REFRIGERANT SYSTEM DIAGRAM

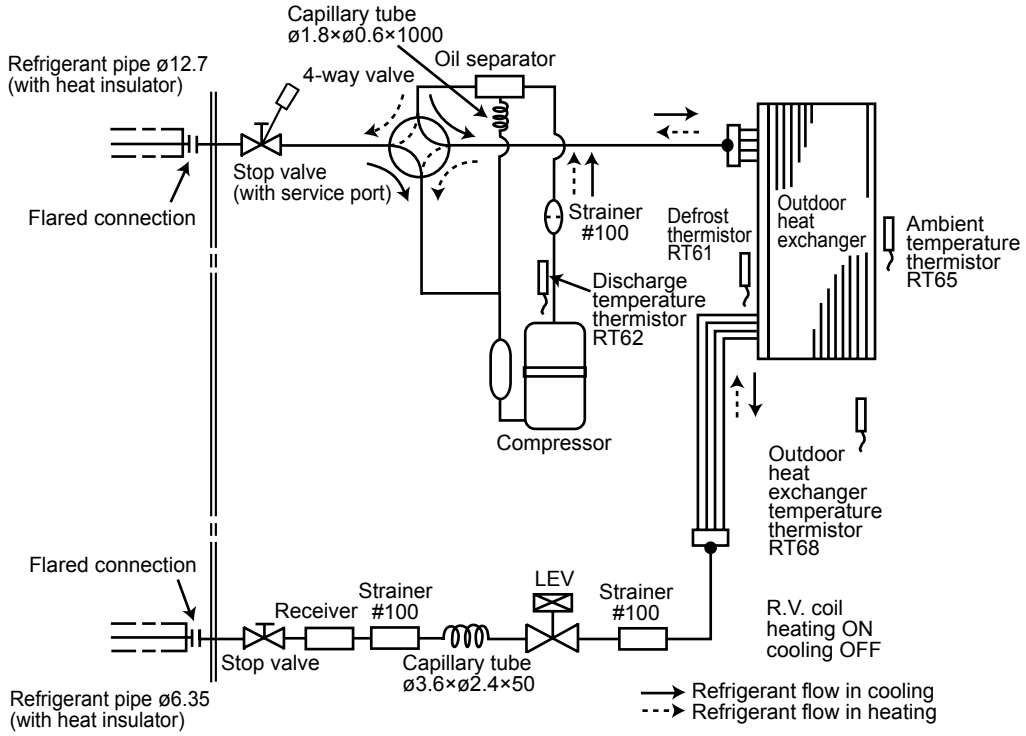
MUZ-GB50VA- E1

Unit: mm



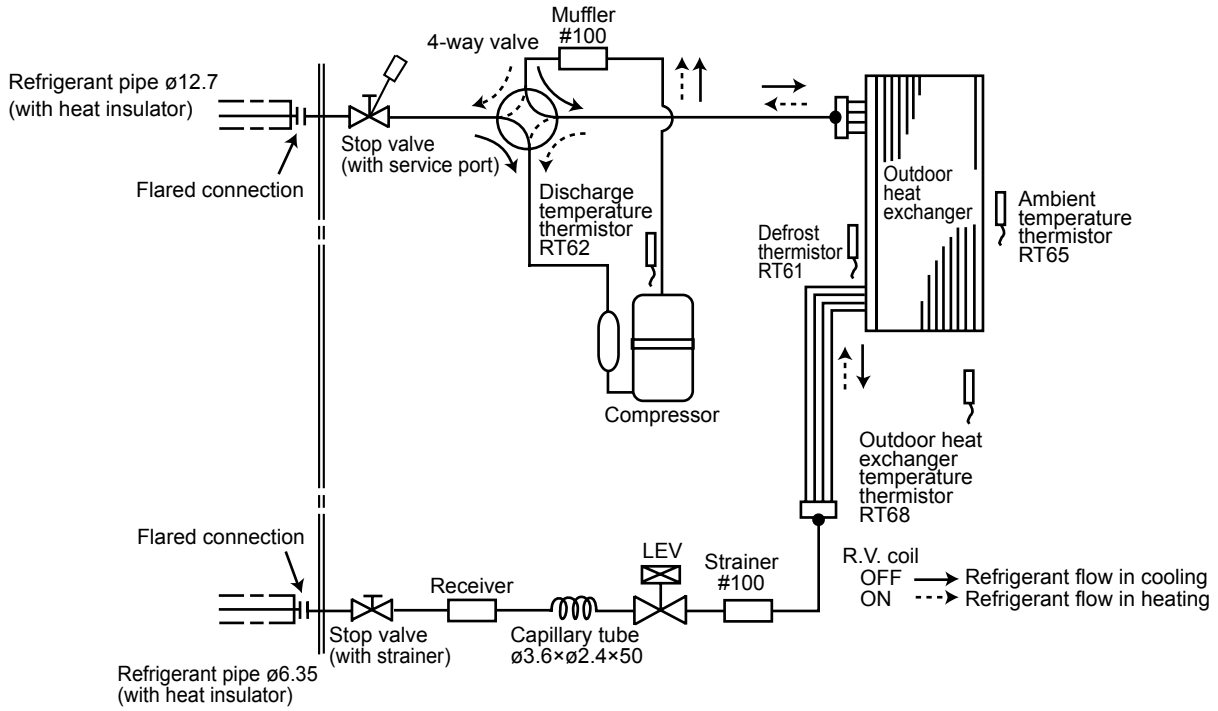
MUZ-GB50VA- E1
MUZ-GB50VA- E2

Unit: mm



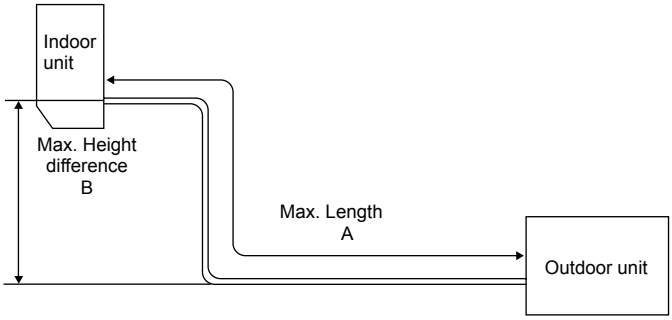
MUZ-GB50VA- E3

Unit: mm



MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

	Refrigerant piping : m		Piping size O.D : mm	
	Max. Length A	Max. Height difference B	Gas	Liquid
MUZ-GB50VA	30	15	12.7	6.35



ADDITIONAL REFRIGERANT CHARGE (R410A : g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7 m	10 m	15 m	20 m	25 m	30 m
MUZ-GB50VA	1,500	0	60	160	260	360	460

Calculation : X g = 20 g/m × (Refrigerant piping length (m) - 7)

NOTE : Refrigerant piping exceeding 7 m requires additional refrigerant charge according to the calculation.

8 PERFORMANCE CURVES

MUZ-GB50VA

The standard specifications apply only to the operation of the air conditioner under normal conditions. Since operating conditions vary according to the areas where these units are installed, the following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

(1) GUARANTEED VOLTAGE

198 ~ 264 V, 50 Hz

(2) AIR FLOW

Air flow should be set at MAX.

(3) MAIN READINGS

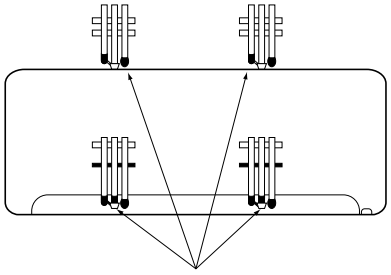
(1) Indoor intake air wet-bulb temperature :	°C [WB]	Cooling
(2) Indoor outlet air wet-bulb temperature :	°C [WB]	
(3) Outdoor intake air dry-bulb temperature :	°C [DB]	
(4) Total input:	W	
(5) Indoor intake air dry-bulb temperature :	°C [DB]	Heating
(6) Outdoor intake air wet-bulb temperature :	°C [WB]	
(7) Total input :	W	

Indoor air wet and dry bulb temperature difference on the left side of the following chart shows the difference between the indoor intake air wet and dry bulb temperature and the indoor outlet air wet and dry bulb temperature for your reference at service.

How to measure the indoor air wet and dry bulb temperature difference

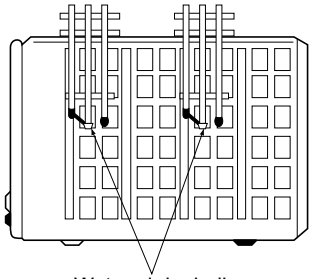
1. Attach at least 2 sets of wet and dry bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet and dry bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet and dry bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY OPERATION switch once (twice) to start the EMERGENCY COOL (HEAT) MODE.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. 10 minutes later, measure temperature again and check that the temperature does not change.

INDOOR UNIT



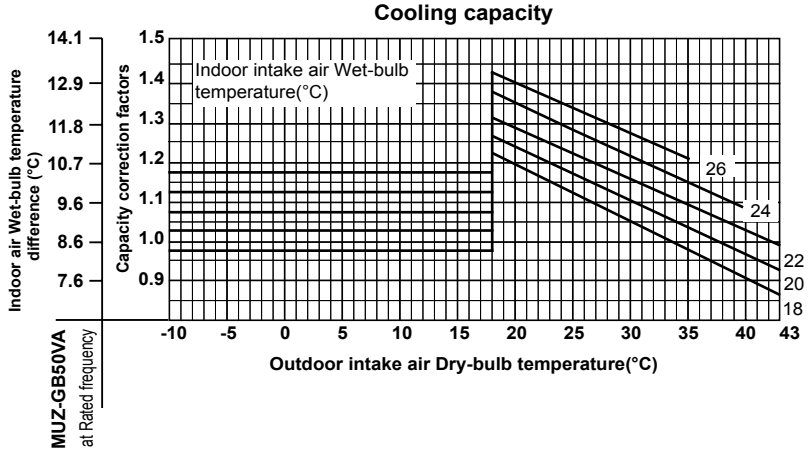
Wet and dry bulb thermometers
FRONT VIEW

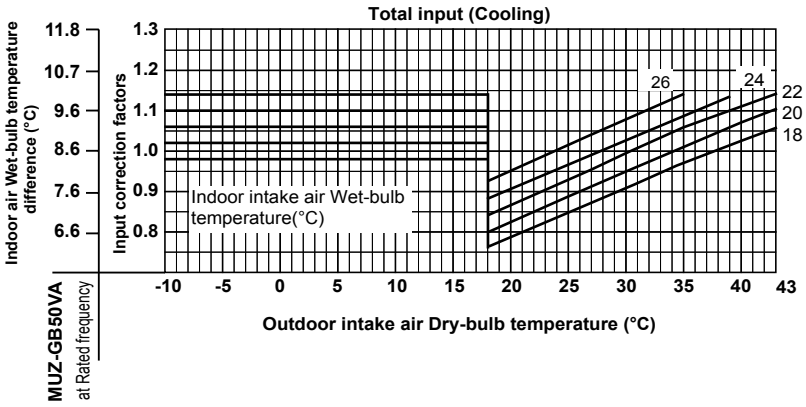
OUTDOOR UNIT

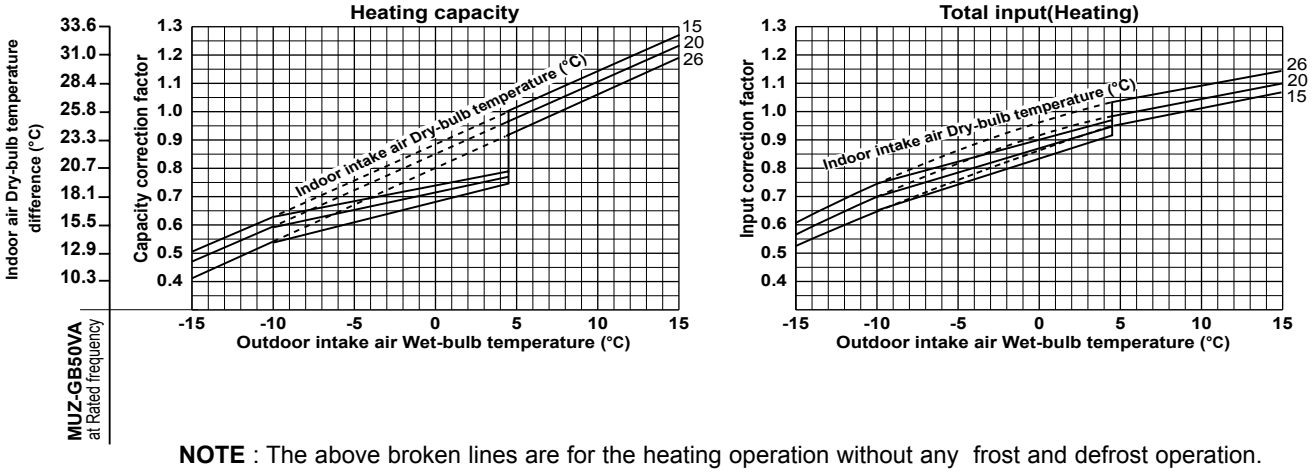


Wet and dry bulb thermometers
BACK VIEW

8-1. CAPACITY AND INPUT CURVES

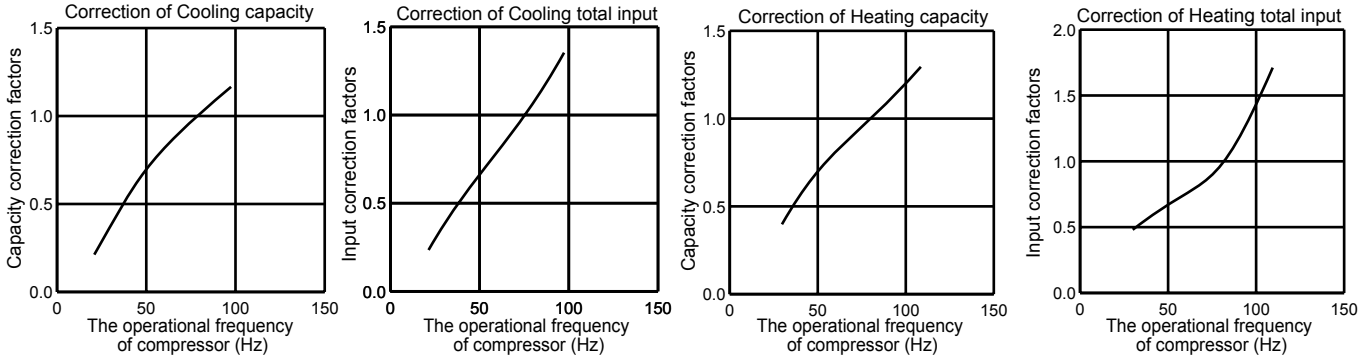






NOTE : The above broken lines are for the heating operation without any frost and defrost operation.

8-2. CAPACITY AND INPUT CORRECTION BY OPERATIONAL FREQUENCY OF COMPRESSOR


Correction of Cooling capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Cooling total input
Input correction factors
The operational frequency of compressor (Hz)
Correction of Heating capacity
Capacity correction factors
The operational frequency of compressor (Hz)
Correction of Heating total input
Input correction factors
The operational frequency of compressor (Hz)

8-3. TEST RUN OPERATION (How to operate fixed-frequency operation)

1. Press EMERGENCY OPERATION switch to start COOL or HEAT mode (COOL : Press once, HEAT : Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58 Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (Operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

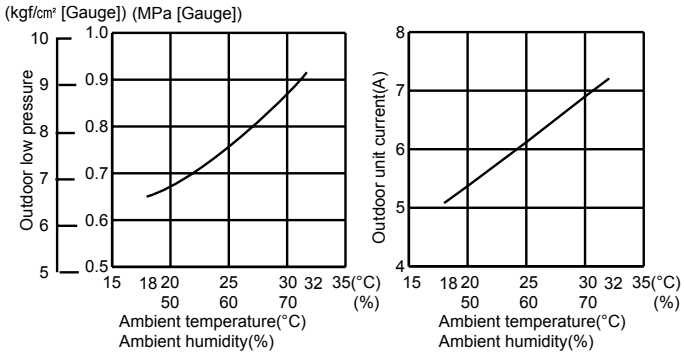
8-4. OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT

COOL operation

① Both indoor and outdoor unit are under the same temperature/ humidity condition.

② Operation : TEST RUN OPERATION (Refer to 8-3.)

Dry-bulb temperature (°C)	Relative humidity (%)
20	50
25	60
30	70



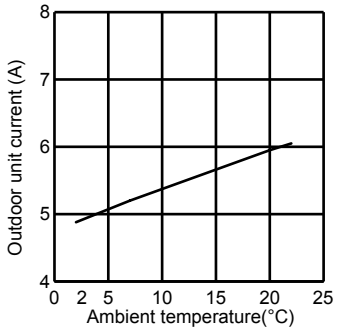
NOTE: The unit of pressure has been changed to MPa based on the international system of units (SI unit system). The conversion factor is: **1 (MPa [Gauge] = 10.2 (Kgf/cm² [Gauge])**

HEAT operation

① Condition :

	Indoor	Outdoor			
Dry bulb temperature (°C)	20.0	2	7	15	20.0
Wet bulb temperature (°C)	14.5	1	6	12	14.5

② Operation : TEST RUN OPERATION (Refer to 8-3.)



PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GB50VA : MUZ-GB50VA

CAPACITY : 5.0 kW SHF : 0.69 INPUT : 1650 W

INDOOR DB (°C)	INDOOR WB (°C)	OUTDOOR DB (°C)															
		21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.88	3.00	0.51	1320	5.63	2.87	0.51	1386	5.40	2.75	0.51	1452	5.20	2.65	0.51	1518
21	20	6.13	2.39	0.39	1386	5.88	2.29	0.39	1469	5.70	2.22	0.39	1502	5.50	2.15	0.39	1568
22	18	5.88	3.23	0.55	1320	5.63	3.09	0.55	1386	5.40	2.97	0.55	1452	5.20	2.86	0.55	1518
22	20	6.13	2.63	0.43	1386	5.88	2.53	0.43	1469	5.70	2.45	0.43	1502	5.50	2.37	0.43	1568
22	22	6.38	1.98	0.31	1436	6.15	1.91	0.31	1526	6.00	1.86	0.31	1568	5.75	1.78	0.31	1634
23	18	5.88	3.47	0.59	1320	5.63	3.32	0.59	1386	5.40	3.19	0.59	1452	5.20	3.07	0.59	1518
23	20	6.13	2.88	0.47	1386	5.88	2.76	0.47	1469	5.70	2.68	0.47	1502	5.50	2.59	0.47	1568
23	22	6.38	2.23	0.35	1436	6.15	2.15	0.35	1526	6.00	2.10	0.35	1568	5.75	2.01	0.35	1634
24	18	5.88	3.70	0.63	1320	5.63	3.54	0.63	1386	5.40	3.40	0.63	1452	5.20	3.28	0.63	1518
24	20	6.13	3.12	0.51	1386	5.88	3.00	0.51	1469	5.70	2.91	0.51	1502	5.50	2.81	0.51	1568
24	22	6.38	2.49	0.39	1436	6.15	2.40	0.39	1526	6.00	2.34	0.39	1568	5.75	2.24	0.39	1634
24	24	6.70	1.81	0.27	1502	6.45	1.74	0.27	1584	6.30	1.70	0.27	1634	6.10	1.65	0.27	1716
25	18	5.88	3.94	0.67	1320	5.63	3.77	0.67	1386	5.40	3.62	0.67	1452	5.20	3.48	0.67	1518
25	20	6.13	3.37	0.55	1386	5.88	3.23	0.55	1469	5.70	3.14	0.55	1502	5.50	3.03	0.55	1568
25	22	6.38	2.74	0.43	1436	6.15	2.64	0.43	1526	6.00	2.58	0.43	1568	5.75	2.47	0.43	1634
25	24	6.70	2.08	0.31	1502	6.45	2.00	0.31	1584	6.30	1.95	0.31	1634	6.10	1.89	0.31	1716
26	18	5.88	4.17	0.71	1320	5.63	3.99	0.71	1386	5.40	3.83	0.71	1452	5.20	3.69	0.71	1518
26	20	6.13	3.61	0.59	1386	5.88	3.47	0.59	1469	5.70	3.36	0.59	1502	5.50	3.25	0.59	1568
26	22	6.38	3.00	0.47	1436	6.15	2.89	0.47	1526	6.00	2.82	0.47	1568	5.75	2.70	0.47	1634
26	24	6.70	2.35	0.35	1502	6.45	2.26	0.35	1584	6.30	2.21	0.35	1634	6.10	2.14	0.35	1716
26	26	6.90	1.59	0.23	1584	6.70	1.54	0.23	1667	6.60	1.52	0.23	1716	6.40	1.47	0.23	1766
27	18	5.88	4.41	0.75	1320	5.63	4.22	0.75	1386	5.40	4.05	0.75	1452	5.20	3.90	0.75	1518
27	20	6.13	3.86	0.63	1386	5.88	3.70	0.63	1469	5.70	3.59	0.63	1502	5.50	3.47	0.63	1568
27	22	6.38	3.25	0.51	1436	6.15	3.14	0.51	1526	6.00	3.06	0.51	1568	5.75	2.93	0.51	1634
27	24	6.70	2.61	0.39	1502	6.45	2.52	0.39	1584	6.30	2.46	0.39	1634	6.10	2.38	0.39	1716
27	26	6.90	1.86	0.27	1584	6.70	1.81	0.27	1667	6.60	1.78	0.27	1716	6.40	1.73	0.27	1766
28	18	5.88	4.64	0.79	1320	5.63	4.44	0.79	1386	5.40	4.27	0.79	1452	5.20	4.11	0.79	1518
28	20	6.13	4.10	0.67	1386	5.88	3.94	0.67	1469	5.70	3.82	0.67	1502	5.50	3.69	0.67	1568
28	22	6.38	3.51	0.55	1436	6.15	3.38	0.55	1526	6.00	3.30	0.55	1568	5.75	3.16	0.55	1634
28	24	6.70	2.88	0.43	1502	6.45	2.77	0.43	1584	6.30	2.71	0.43	1634	6.10	2.62	0.43	1716
28	26	6.90	2.14	0.31	1584	6.70	2.08	0.31	1667	6.60	2.05	0.31	1716	6.40	1.98	0.31	1766
29	18	5.88	4.88	0.83	1320	5.63	4.67	0.83	1386	5.40	4.48	0.83	1452	5.20	4.32	0.83	1518
29	20	6.13	4.35	0.71	1386	5.88	4.17	0.71	1469	5.70	4.05	0.71	1502	5.50	3.91	0.71	1568
29	22	6.38	3.76	0.59	1436	6.15	3.63	0.59	1526	6.00	3.54	0.59	1568	5.75	3.39	0.59	1634
29	24	6.70	3.15	0.47	1502	6.45	3.03	0.47	1584	6.30	2.96	0.47	1634	6.10	2.87	0.47	1716
29	26	6.90	2.42	0.35	1584	6.70	2.35	0.35	1667	6.60	2.31	0.35	1716	6.40	2.24	0.35	1766
30	18	5.88	5.11	0.87	1320	5.63	4.89	0.87	1386	5.40	4.70	0.87	1452	5.20	4.52	0.87	1518
30	20	6.13	4.59	0.75	1386	5.88	4.41	0.75	1469	5.70	4.28	0.75	1502	5.50	4.13	0.75	1568
30	22	6.38	4.02	0.63	1436	6.15	3.87	0.63	1526	6.00	3.78	0.63	1568	5.75	3.62	0.63	1634
30	24	6.70	3.42	0.51	1502	6.45	3.29	0.51	1584	6.30	3.21	0.51	1634	6.10	3.11	0.51	1716
30	26	6.90	2.69	0.39	1584	6.70	2.61	0.39	1667	6.60	2.57	0.39	1716	6.40	2.50	0.39	1766
31	18	5.88	5.35	0.91	1320	5.63	5.12	0.91	1386	5.40	4.91	0.91	1452	5.20	4.73	0.91	1518
31	20	6.13	4.84	0.79	1386	5.88	4.64	0.79	1469	5.70	4.50	0.79	1502	5.50	4.35	0.79	1568
31	22	6.38	4.27	0.67	1436	6.15	4.12	0.67	1526	6.00	4.02	0.67	1568	5.75	3.85	0.67	1634
31	24	6.70	3.69	0.55	1502	6.45	3.55	0.55	1584	6.30	3.47	0.55	1634	6.10	3.36	0.55	1716
31	26	6.90	2.97	0.43	1584	6.70	2.88	0.43	1667	6.60	2.84	0.43	1716	6.40	2.75	0.43	1766
32	18	5.88	5.58	0.95	1320	5.63	5.34	0.95	1386	5.40	5.13	0.95	1452	5.20	4.94	0.95	1518
32	20	6.13	5.08	0.83	1386	5.88	4.88	0.83	1469	5.70	4.73	0.83	1502	5.50	4.57	0.83	1568
32	22	6.38	4.53	0.71	1436	6.15	4.37	0.71	1526	6.00	4.26	0.71	1568	5.75	4.08	0.71	1634
32	24	6.70	3.95	0.59	1502	6.45	3.81	0.59	1584	6.30	3.72	0.59	1634	6.10	3.60	0.59	1716
32	26	6.90	3.24	0.47	1584	6.70	3.15	0.47	1667	6.60	3.10	0.47	1716	6.40	3.01	0.47	1766

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA COOL operation at Rated frequency

MSZ-GB50VA : MUZ-GB50VA

CAPACITY : 5.0 kW SHF : 0.69 INPUT : 1650 W

INDOOR DB (°C)	INDOOR WB (°C)	OUTDOOR DB (°C)											
		35				40				43			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.90	2.50	0.51	1617	4.50	2.30	0.51	1716	4.30	2.19	0.51	1749
21	20	5.15	2.01	0.39	1683	4.80	1.87	0.39	1766	4.60	1.79	0.39	1815
22	18	4.90	2.70	0.55	1617	4.50	2.48	0.55	1716	4.30	2.37	0.55	1749
22	20	5.15	2.21	0.43	1683	4.80	2.06	0.43	1766	4.60	1.98	0.43	1815
22	22	5.45	1.69	0.31	1749	5.10	1.58	0.31	1848	4.90	1.52	0.31	1881
23	18	4.90	2.89	0.59	1617	4.50	2.66	0.59	1716	4.30	2.54	0.59	1749
23	20	5.15	2.42	0.47	1683	4.80	2.26	0.47	1766	4.60	2.16	0.47	1815
23	22	5.45	1.91	0.35	1749	5.10	1.79	0.35	1848	4.90	1.72	0.35	1881
24	18	4.90	3.09	0.63	1617	4.50	2.84	0.63	1716	4.30	2.71	0.63	1749
24	20	5.15	2.63	0.51	1683	4.80	2.45	0.51	1766	4.60	2.35	0.51	1815
24	22	5.45	2.13	0.39	1749	5.10	1.99	0.39	1848	4.90	1.91	0.39	1881
24	24	5.75	1.55	0.27	1815	5.40	1.46	0.27	1898	5.25	1.42	0.27	1947
25	18	4.90	3.28	0.67	1617	4.50	3.02	0.67	1716	4.30	2.88	0.67	1749
25	20	5.15	2.83	0.55	1683	4.80	2.64	0.55	1766	4.60	2.53	0.55	1815
25	22	5.45	2.34	0.43	1749	5.10	2.19	0.43	1848	4.90	2.11	0.43	1881
25	24	5.75	1.78	0.31	1815	5.40	1.67	0.31	1898	5.25	1.31	0.25	1947
26	18	4.90	3.48	0.71	1617	4.50	3.20	0.71	1716	4.30	3.05	0.71	1749
26	20	5.15	3.04	0.59	1683	4.80	2.83	0.59	1766	4.60	2.71	0.59	1815
26	22	5.45	2.56	0.47	1749	5.10	2.40	0.47	1848	4.90	2.30	0.47	1881
26	24	5.75	2.01	0.35	1815	5.40	1.89	0.35	1898	5.25	1.21	0.23	1947
26	26	6.05	1.39	0.23	1881	5.70	1.31	0.23	1964	5.50	1.27	0.23	2013
27	18	4.90	3.68	0.75	1617	4.50	3.38	0.75	1716	4.30	3.23	0.75	1749
27	20	5.15	3.24	0.63	1683	4.80	3.02	0.63	1766	4.60	2.90	0.63	1815
27	22	5.45	2.78	0.51	1749	5.10	2.60	0.51	1848	4.90	2.50	0.51	1881
27	24	5.75	2.24	0.39	1815	5.40	2.11	0.39	1898	5.25	1.10	0.21	1947
27	26	6.05	1.63	0.27	1881	5.70	1.54	0.27	1964	5.50	1.49	0.27	2013
28	18	4.90	3.87	0.79	1617	4.50	3.56	0.79	1716	4.30	3.40	0.79	1749
28	20	5.15	3.45	0.67	1683	4.80	3.22	0.67	1766	4.60	3.08	0.67	1815
28	22	5.45	3.00	0.55	1749	5.10	2.81	0.55	1848	4.90	2.70	0.55	1881
28	24	5.75	2.47	0.43	1815	5.40	2.32	0.43	1898	5.25	1.00	0.19	1947
28	26	6.05	1.88	0.31	1881	5.70	1.77	0.31	1964	5.50	1.71	0.31	2013
29	18	4.90	4.07	0.83	1617	4.50	3.74	0.83	1716	4.30	3.57	0.83	1749
29	20	5.15	3.66	0.71	1683	4.80	3.41	0.71	1766	4.60	3.27	0.71	1815
29	22	5.45	3.22	0.59	1749	5.10	3.01	0.59	1848	4.90	2.89	0.59	1881
29	24	5.75	2.70	0.47	1815	5.40	2.54	0.47	1898	5.25	0.89	0.17	1947
29	26	6.05	2.12	0.35	1881	5.70	2.00	0.35	1964	5.50	1.93	0.35	2013
30	18	4.90	4.26	0.87	1617	4.50	3.92	0.87	1716	4.30	3.74	0.87	1749
30	20	5.15	3.86	0.75	1683	4.80	3.60	0.75	1766	4.60	3.45	0.75	1815
30	22	5.45	3.43	0.63	1749	5.10	3.21	0.63	1848	4.90	3.09	0.63	1881
30	24	5.75	2.93	0.51	1815	5.40	2.75	0.51	1898	5.25	0.79	0.15	1947
30	26	6.05	2.36	0.39	1881	5.70	2.22	0.39	1964	5.50	2.15	0.39	2013
31	18	4.90	4.46	0.91	1617	4.50	4.10	0.91	1716	4.30	3.91	0.91	1749
31	20	5.15	4.07	0.79	1683	4.80	3.79	0.79	1766	4.60	3.63	0.79	1815
31	22	5.45	3.65	0.67	1749	5.10	3.42	0.67	1848	4.90	3.28	0.67	1881
31	24	5.75	3.16	0.55	1815	5.40	2.97	0.55	1898	5.25	0.68	0.13	1947
31	26	6.05	2.60	0.43	1881	5.70	2.45	0.43	1964	5.50	2.37	0.43	2013
32	18	4.90	4.66	0.95	1617	4.50	4.28	0.95	1716	4.30	4.09	0.95	1749
32	20	5.15	4.27	0.83	1683	4.80	3.98	0.83	1766	4.60	3.82	0.83	1815
32	22	5.45	3.87	0.71	1749	5.10	3.62	0.71	1848	4.90	3.48	0.71	1881
32	24	5.75	3.39	0.59	1815	5.40	3.19	0.59	1898	5.25	0.58	0.11	1947
32	26	6.05	2.84	0.47	1881	5.70	2.68	0.47	1964	5.50	2.59	0.47	2013

NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

PERFORMANCE DATA HEAT operation at Rated frequency

MSZ-GB50VA : MUZ-GB50VA

CAPACITY : 5.8 kW INPUT : 1700 W

INDOOR DB (°C)	OUTDOOR WB (°C)													
	-10		-5		0		5		10		15		20	
	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	3.65	1105	4.41	1326	5.16	1496	5.92	1615	6.67	1717	7.37	1768	8.12	1802
21	3.48	1190	4.18	1411	4.93	1564	5.63	1683	6.38	1768	7.08	1819	7.80	1887
26	3.13	1275	3.89	1496	4.58	1649	5.34	1768	6.09	1853	6.79	1904	7.54	1955

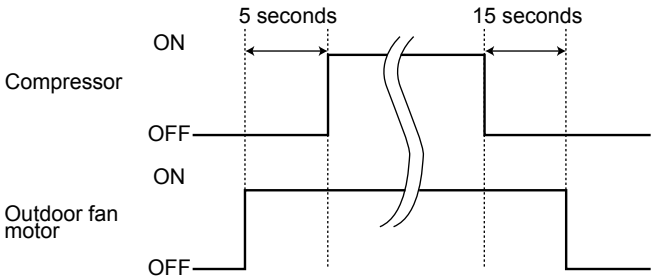
NOTE Q : Total capacity (kW) INPUT : Total power input (W) DB : Dry-bulb temperature WB : Wet-bulb temperature

9 ACTUATOR CONTROL

MUZ-GB50VA

9-1. OUTDOOR FAN MOTOR CONTROL

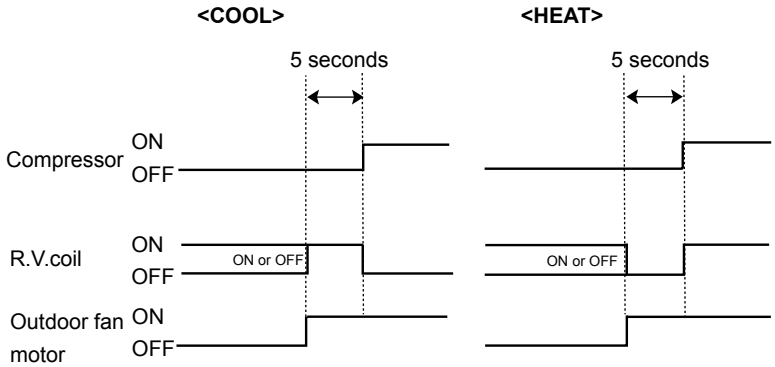
The fan motor turns ON/OFF, interlocking with the compressor.
[ON] The fan motor turns ON 5 seconds before the compressor starts up.
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



9-2. R.V. COIL CONTROL

Heating · · · · · · · · · · · · · · · · · · ON
Cooling · · · · · · · · · · · · · · · · · · OFF
Dry · OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



9-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR

MUZ-GB50VA

Sensor	Purpose	Actuator				
		Compressor	LEV	Outdoor fan motor	R.V. coil	Indoor fan motor
Discharge temperature thermistor	Protection	○	○			
Indoor coil temperature thermistor	Cooling : Coil frost prevention	○				
	Heating : High pressure protection	○	○			
Defrost thermistor	Heating : Defrosting	○	○	○	○	○
Fin temperature thermistor	Protection	○		○		
Ambient temperature thermistor	Cooling : Low ambient temperature operation	○	○	○		
Outdoor heat exchanger temperature thermistor	Cooling : Low ambient temperature operation	○	○	○		
	Cooling : High pressure protection	○	○	○		

10 SERVICE FUNCTIONS

MUZ-GB50VA- E3

10-1. CHANGE IN DEFROST SETTING

Changing defrost finish temperature

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board. (Refer to 11-6-4.)

Jumper wire		Defrost finish temperature (°C)
JS	Soldered (Initial setting)	9
	None (Cut)	18

10-2. PRE-HEAT CONTROL SETTING

PRE-HEAT CONTROL

When moisture gets into the refrigerant cycle, it may interfere the start-up of the compressor at low outside temperature. The pre-heat control prevents this interference. The pre-heat control turns ON when outside temperature is 20°C or below. When pre-heat control is turned ON, compressor is energized. (About 50 W)

<JK> To activate the pre-heat control, cut the JK wire of the inverter P.C. board. (Refer to 11-6.4)

NOTE: When the inverter P.C. board is replaced, check the Jumper wires, and cut/solder them if necessary.

11 TROUBLESHOOTING

MUZ-GB50VA

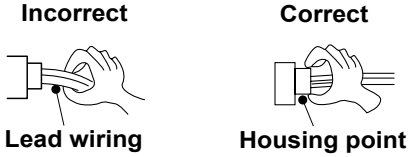
11-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and after confirming the horizontal vane is closed, turn off the breaker and/or disconnect the power plug.
2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
3) When removing the electrical parts, be careful to the residual voltage of smoothing capacitor.
4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



3. Troubleshooting procedure

1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is flashing on and off before starting service work.
2) Before servicing, check that the connector and terminal are connected properly.
3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) When troubleshooting, refer to 11-2 and 11-3.

11-2. FAILURE MODE RECALL FUNCTION

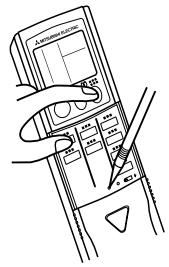
Outline of the function

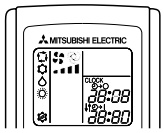
This air conditioner can memorize the abnormal condition which has occurred once.

Even though LED indication listed on the troubleshooting check table (11-3.) disappears, the memorized failure details can be recalled.

This mode is very useful when the unit needs to be repaired for the abnormality which does not recur.

1. Flow chart of failure mode recall function for the indoor/outdoor unit





※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

Operational procedure

The cause of abnormality cannot be found because the abnormality does not recur.

Setting up the failure mode recall function

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
Hold down the other two buttons for another 3 seconds. Confirm that the indicators on the LCD screen shown in the right figures are all displayed. Then release the buttons.

Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → Indoor unit is normal.
But the outdoor unit might be abnormal because there are some abnormalities that can't be recalled with this way.
Confirm if outdoor unit is abnormal according to the detailed outdoor unit failure mode recall function. (Refer to 11-2.2)

Yes (Blinks)

Judgment of indoor/outdoor abnormality

Before blinking, does the left lamp of OPERATION INDICATOR lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep):
The outdoor unit is abnormal.

Yes → The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table. (Refer to 11-2.3)
Make sure to check at least two consecutive blinking cycles. ※3

No → The indoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the indoor unit failure mode table. (Refer to indoor unit service manual.)
Make sure to check at least two consecutive blinking cycles. ※2

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

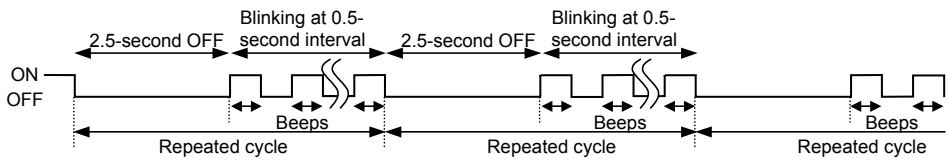
Repair the defective parts.

Deleting the memorized abnormal condition

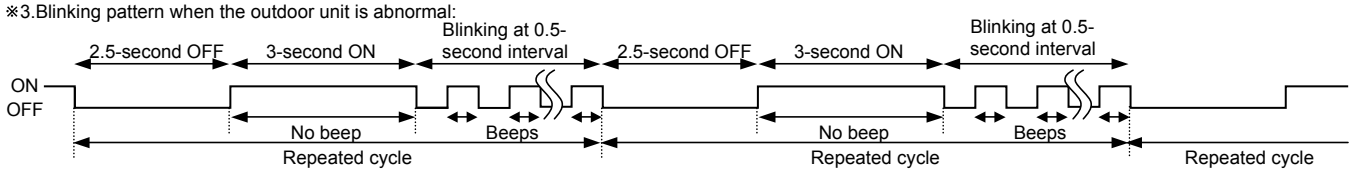
① After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
② Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③ Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④ Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

NOTE: 1. Make sure to release the failure mode recall function once it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2. Blinking pattern when the indoor unit is abnormal:



※3.Blinking pattern when the outdoor unit is abnormal:



2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

The outdoor unit might be abnormal.
Confirm if outdoor unit is abnormal according to the following procedures.

↓

Confirm that the remote controller is in the failure mode recall function.

↓

With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 25°C. ※1

※1. Regardless of normal or abnormal condition, 2 short beeps are emitted as the signal is received.

↓

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: The outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → The outdoor unit is normal.

Yes (Blinks)

↓

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table (11-2.3.).
Make sure to check at least two consecutive blinking cycles. ※2

↓

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
Turn OFF the power supply and turn it ON again.
Press RESET button of the remote controller.

The outdoor unit is normal. → Release the failure mode recall function according to the left mentioned procedure.

↓

Repair the defective parts.

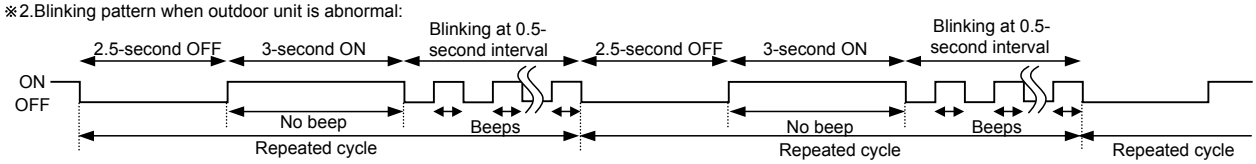
↓

Deleting the memorized abnormal condition

① After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" (11-2.1.).
② Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③ Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④ Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

NOTE: 1. Make sure to release the failure mode recall function once it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2.Blinking pattern when outdoor unit is abnormal:



3. Outdoor unit failure mode table

MUZ-GB50VA- E1 / E2

The left lamp of OPERATION INDICATOR lamp (Indoor unit)	Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)		Condition	Remedy	Indoor/ outdoor unit failure mode recall function
		LED1	LED2			
OFF	None (Normal)	—	—	—	—	—
2-time flash	Outdoor power system	Lighting	Lighting	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-5.Ⓐ "How to check inverter/compressor". • Check the stop valve.	○
3-time flash	Discharge temperature thermistor	Lighting	Once	Thermistor shorts or opens during compressor running.	• Refer to 11-5.Ⓖ "Check of outdoor thermistors".	○
	Defrost thermistor	Lighting	Once			
	Ambient temperature thermistor	Lighting	Twice			
	Fin temperature thermistor	Lighting	3 times			
	P.C. board temperature thermistor	Lighting	4 times		• Replace the outdoor electronic control P.C. board.	
	Outdoor heat exchanger temperature thermistor	Lighting	9 times		• Refer to 11-5.Ⓖ "Check of outdoor thermistors".	
4-time flash	Overcurrent	Once	Goes out	28 A current flows into intelligent power module.	• Reconnect compressor connector. • Refer to 11-5.Ⓐ "How to check inverter/compressor. • Check the stop valve.	—
5-time flash	Discharge temperature	Lighting	Lighting	Discharge temperature exceeds 116°C during operation. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.Ⓚ "Check of LEV".	—
6-time flash	High pressure	Lighting	Lighting	The outdoor heat exchanger temperature exceeds 70°C during cooling or the indoor gas pipe temperature exceeds 70°C during heating.	• Check refrigerant circuit and refrigerant amount. • Check the stop valve.	—
7-time flash	Fin temperature	3 times	Goes out	The fin temperature exceeds 87°C during operation.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 11-5.Ⓘ "Check of outdoor fan motor".	—
	P.C. board temperature	4 times	Goes out	The P.C. board temperature exceeds 70°C during operation.		
8-time flash	Outdoor fan motor	Lighting	Lighting	Failure occurs continuously three times within 30 seconds after the fan gets started.	• Refer to 11-5.Ⓘ "Check of outdoor fan motor".	—
9-time flash	Nonvolatile memory data	Lighting	5 times	Nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.	○
10-time flash	Discharge temperature	Lighting	Lighting	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.Ⓚ "Check of LEV".	—
11-timeflash	Communication error between P.C. boards	Lighting	6 times	Communication error occurs between the electronic control P.C. board and power board for more than 10 seconds.	• Check the connecting wire between outdoor electronic control P.C. board and power board.	—
				The communication between boards protection stop is continuously performed twice.		○
	Current sensor	Lighting	7 times	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.	—
				Current sensor protection stop is continuously performed twice.		○
	Zero cross detecting circuit	5 times	Goes out	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board.	—
				The protection stop of the zero cross detecting circuit is continuously performed 10 times.		○
	Converter	5 times	Goes out	A failure is detected in the operation of the converter during operation.	• Check the voltage of power supply. • Replace the power board.	—
	Bus-bar voltage (1)	5 times	Goes out	The bus-bar voltage exceeds 400 V or falls to 200 V or below during compressor operating.		
	Bus-bar voltage (2) ※ Even if this protection stop is performed continuously 3 times, it does not mean the abnormality in outdoor power system.	6 times	Goes out	The bus-bar voltage exceeds 400 V or falls to 50 V or below during compressor operating.	• Check the voltage of power supply. • Replace the outdoor electronic control P.C. board.	

NOTE : Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3.).

MUZ-GB50VA- E3

The left lamp of OPERATION INDICATOR lamp (Indoor unit)	Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)	Condition	Remedy	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
OFF	None (Normal)	—	—	—	—	—
2-time flash 2.5 seconds OFF	Outdoor power system	—	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	•Reconnect connectors. •Refer to 11-5. Ⓐ"How to check inverter/ compressor". •Check stop valve.	○	○
3-time flash 2.5 seconds OFF	Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	•Refer to 11-5.Ⓖ"Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED.	○	○
	Defrost thermistor					
	Fin temperature thermistor	3-time flash 2.5 seconds OFF				
	P.C. board temperature thermistor	4-time flash 2.5 seconds OFF				
	Ambient temperature thermistor	2-time flash 2.5 seconds OFF				
4-time flash 2.5 seconds OFF	Overcurrent	11-time flash 2.5 seconds OFF	Large current flows into intelligent power module.	•Reconnect compressor connector. •Refer to 11-5.Ⓐ"How to check inverter/ compressor". •Check stop valve.	—	○
	Compressor synchronous abnormality (Compressor start-up failure protection)	12-time flash 2.5 seconds OFF	Waveform of compressor current is distorted.	•Reconnect compressor connector. •Refer to 11-5.Ⓐ"How to check inverter/ compressor".	—	○
5-time flash 2.5 seconds OFF	Discharge temperature	—	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5.Ⓚ"Check of LEV".	—	○
6-time flash 2.5 seconds OFF	High pressure	—	Temperature indoor coil thermistor exceeds 70°C in HEAT mode. Temperature defrost thermistor exceeds 70°C in COOL mode.	•Check refrigerant circuit and refrigerant amount. •Check stop valve.	—	○
7-time flash 2.5 seconds OFF	Fin temperature/ P.C. board temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 ~ 80°C, or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 70 ~ 75°C.	•Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5.Ⓘ"Check of outdoor fan motor".	—	○
8-time flash 2.5 seconds OFF	Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	•Refer to 11-5.Ⓘ"Check of outdoor fan motor". Refer to 11-5.Ⓛ"Check of inverter P.C. board".	—	○
9-time flash 2.5 seconds OFF	Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	•Replace the inverter P.C. board.	○	○
10-time flash 2.5 seconds OFF	Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	•Refer to 11-5.Ⓚ"Check of LEV". •Check refrigerant circuit and refrigerant amount.	—	○
11-time flash 2.5 seconds OFF	DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	•Refer to 11-5.Ⓐ"How to check inverter/ compressor".	—	○
	Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.			
12-time flash 2.5 seconds OFF	Overcurrent Compressor open-phase	10-time flash 2.5 seconds OFF	Large current flows into intelligent power module (IPM). The open-phase operation of compressor is detected. The interphase short out occurs in the output of the intelligent power module (IPM). The compressor winding shorts out.	•Reconnect compressor connector. •Refer to 11-5. Ⓐ"How to check inverter/ compressor".	—	○
14-time flash 2.5 seconds OFF	Stop valve (Closed valve)	14-time flash 2.5 seconds OFF	Closed valve is detected by compressor current.	•Check stop valve	○	○

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3.).

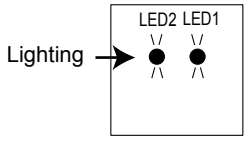
11-3. TROUBLESHOOTING CHECK TABLE

MUZ-GB50VA- E1 / E2

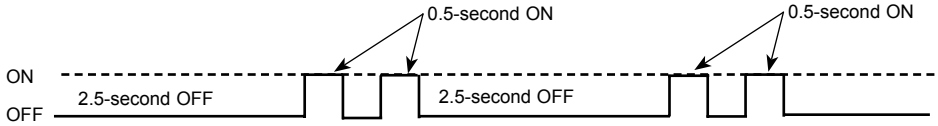
No.	Symptom	LED indication		Abnormal point/ Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
1	Outdoor unit does not operate.	Lightning	Twice	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-5.Ⓐ "How to check inverter/compressor". • Check the stop valve.
2		Lightning	3 times	Discharge temperature thermistor	A short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Refer to 11-5.Ⓖ "Check of outdoor thermistors".
3		Lightning	4 times	Fin temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-5.Ⓖ "Check of outdoor thermistors".
				P.C. board temperature thermistor		• Replace the outdoor electronic control P.C. board.
4		Lightning	5 times	Ambient temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-5.Ⓖ "Check of outdoor thermistors".
				Outdoor heat exchanger temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	
				Defrost thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes of compressor stat-up.	
5		Lightning	6 times	Serial signal	The communication fails between the indoor and outdoor unit 3 minutes.	• Refer to 11-5.Ⓜ "How to check miswiring and serial signal error.
6		Lightning	7 times	Nonvolatile memory data	The nonvolatile memory data cannot be read properly.	• Replace the outdoor electronic control P.C. board.
7		Lightning	8 times	Current sensor	Current sensor protection stop is continuously performed twice.	• Replace the power board.
8		Lightning	11 times	Communication error between P.C. boards	The communication protection stop between boards is continuously performed twice.	• Check the connecting wire between outdoor electronic control P.C. board and power board.
9		Lightning	12 times	Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.
10	'Outdoor unit stops and restarts 3 minutes later' is repeated.	Twice	Goes out	IPM protection	Overcurrent is detected after 30 seconds of compressor start-up.	• Reconnect compressor connector. • Refer to 11-5.Ⓐ "How to check inverter/compressor". • Check the stop valve. • Check the power module (PAM module).
				Lock protection	Overcurrent is detected within 30 seconds of compressor start-up.	
11		3 times	Goes out	Discharge temperature protection	Discharge temperature exceeds 116°C during operation and compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	• Check the amount of gas and refrigerant circuit. • Refer to 11-5.Ⓚ "Check of LEV".
12		4 times	Goes out	Fin temperature protection	The fin temperature exceeds 87°C during operation.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 11-5.Ⓘ "Check of outdoor fan motor".
				P.C. board temperature protection	The P.C. board temperature exceeds 70°C during operation.	
13		5 times	Goes out	High-Pressure protection	The outdoor heat exchanger temperature exceeds 70°C during cooling or indoor gas pipe temperature exceeds 70°C during heating.	• Check the amount of gas and the refrigerant circuit. • Check the stop valve.
14		8 times	Goes out	Converter protection	A failure is detected in the operation of the converter during operation.	• Replace the power board.
15		9 times	Goes out	Bus-bar voltage protection (1).	The bus-bar voltage exceeds 400 V or falls to 200 V or below during compressor operating.	• Check the voltage of power supply. • Replace the power board or the outdoor electronic control P.C. board. • Refer to 11-5.Ⓝ "Check of bus-bar voltage".
				Bus-bar voltage protection (2)	The bus-bar voltage exceeds 400 V or falls to 50 V or below during compressor operating.	
16		13 times	Goes out	Outdoor fan motor	Failure occurs continuously three times within 30 seconds after the fan gets started.	• Refer to 11-5.Ⓘ "Check of outdoor fan motor".
17		Lighting	8 times	Current sensor protection	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the power board.
18		Lighting	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds	• Check the connecting wire between outdoor electronic control P.C. board and power board.
19		Lighting	12 times	Zero cross detecting circuit protection	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board.

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 10-6.1.
2. LED is lighted during normal operation.

Outdoor electronic control P.C. board (Parts side)



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



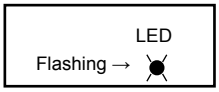
No.	Symptom	LED indication		Abnormal point/ Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
20	Outdoor unit operates.	Once	Lighting	Primary current protection	The input current exceeds 15 A.	These symptoms do not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit aircirculation is short cycled.
				Secondary current protection	The current of the compressor exceeds 15 A.	
21		Twice	Lighting	High-Pressure protection	The indoor gas pipe temperature exceeds 45°C during heating.	
				Defrosting in cooling	The indoor gas pipe temperature falls 3°C or below during cooling.	
22		3 times	Lighting	Discharge temperature protection	The discharge temperature exceeds 100°C during operation.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.Ⓚ "Check of LEV". • Refer to 11-5.Ⓖ "Check of outdoor thermistors''.
23		4 times	Lighting	Low discharge temperature protection	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	• Refer to 11-5.Ⓚ "Check of LEV". • Check refrigerant circuit and refrigerant amount.
24		5 times	Lighting	Cooling high-pressure protection	The outdoor heat exchanger temperature exceeds 58°C during operation.	This symptom does not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
25	Outdoor unit operates	9 times	Lighting	Inverter check mode	The unit is operated with emergency operation switch.	—
26		Lighting	Lighting	Normal	—	—

MUZ-GB50VA- E3

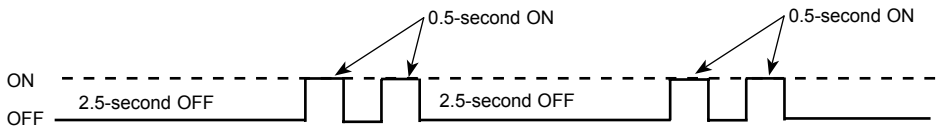
No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Remedy
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or failure of restart of compressor has repeated 24 times.	•Reconnect connector of compressor. •Refer to 11-5.Ⓐ "How to check inverter/ compressor". •Check stop valve.
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.	•Refer to 11-5.Ⓖ "Check of outdoor thermistors".
3			Outdoor control system	Nonvolatile memory data cannot be read properly. (The left lamp of OPERATION INDICATOR lamp of the indoor unit lights up or flashes 7-time.)	•Replace inverter P.C. board.
4		6-time flash 2.5 seconds OFF	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	•Refer to 11-5.Ⓜ "How to check miswiring and serial signal error.
5		11-time flash 2.5 seconds OFF	Stop valve/ Closed valve	Closed valve is detected by compressor current.	•Check stop valve.
6		14-time flash 2.5 seconds OFF	Outdoor unit (Other abnormality)	Outdoor unit is defective.	•Refer to 11-2.2. "Flow chart of the detailed outdoor unit failure mode recall function".
7	'Outdoor unit stops and restarts 3 minutes later' is repeated.	2-time flash 2.5 seconds OFF	Overcurrent protection	Large current flows into intelligent power module, or compressor repeats after 15 seconds when overcurrent protection occurs within 10 seconds after compressor starts. (Repeated 24 times at Maximum)	•Reconnect connector of compressor. •Refer to 11-5.Ⓐ "How to check inverter/compressor". •Check stop valve.
8		3-time flash 2.5 seconds OFF	Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 116 °C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5.Ⓚ "Check of LEV".
9		4-time flash 2.5 seconds OFF	Fin temperature /P.C. board temperature thermistor overheat protection	Temperature of fin temperature thermistor on the heat sink exceeds 75 ~ 88°C or temperature of P.C. board temperature thermistor on the inverter P.C.board exceeds 72 ~ 82°C.	•Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5.Ⓘ "Check of outdoor fan motor".
10		5-time flash 2.5 seconds OFF	High pressure protection	Indoor coil thermistor exceeds 70°C in HEAT mode. Defrost thermistor exceeds 70°C in COOL mode.	•Check refrigerant circuit and refrigerant amount. •Check stop valve.
11		8-time flash 2.5 seconds OFF	Compressor synchronous abnormality	The waveform of compressor current is distorted.	•Reconnect connector of compressor. •Refer to 11-5.Ⓐ "How to check inverter/compressor".
12		10-time flash 2.5 seconds OFF	Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	•Refer to 11-5.Ⓘ "Check of outdoor fan motor. •Refer to 11-5.Ⓛ "Check of inverter P.C. board.
13		12-time flash 2.5 seconds OFF	Each phase current of compressor	Each phase current of compressor cannot be detected normally	•Refer to 11-5.Ⓐ "How to check inverter/compressor".
14		13-time flash 2.5 seconds OFF	DC voltage	DC voltage of inverter cannot be detected normally.	•Refer to 11-5.Ⓐ "How to check inverter/compressor".
15	Outdoor unit operates.	1-time flash 2.5 seconds OFF	Frequency drop by current protection	Current from power outlet reaches the protection current, and compressor frequency lowers.	The unit is normal, but check the following. •Check if indoor filters are clogged. •Check if refrigerant is short. •Check if indoor/outdoor unit air circulation is short cycled.
16		3-time flash 2.5 seconds OFF	Frequency drop by high pressure protection	Temperature of indoor coil thermistor exceeds 55°C in HEAT mode, compressor frequency lowers.	
			Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.	
17		4-time flash 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 111 °C, compressor frequency lowers.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5.Ⓚ "Check of LEV". •Refer to 11-5.Ⓖ "Check of outdoor thermistors".
18	Outdoor unit operates.	7-time flash 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 50 °C or less for 20 minutes.	•Refer to 11-5.Ⓚ "Check of LEV". •Check refrigerant circuit and refrigerant amount.
19		8-time flash 2.5 seconds OFF	PAM protection PAM: Pulse Amplitude Modulation	The overcurrent flows into IGBT (Insulated Gate Bipolar transistor : TR821) or when the bus-bar voltage reaches 320 V or more, PAM stops and restarts.	This is not malfunction. PAM protection will be activated in the following cases; 1 Instantaneous power voltage drop (Short time power failure) 2 When the power supply voltage is high.
20		9-time flash 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	•Check if the connector of the compressor is correctly connected. Refer to 11-5.Ⓐ "How to check inverter/compressor".

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 11-6.4.
2. LED is lighted during normal operation.

Inverter P.C. board(Parts side)



The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is “2”.



11-4. TROUBLE CRITERION OF MAIN PARTS

MUZ-GB50VA

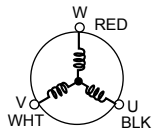
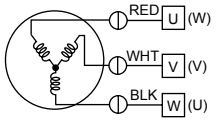
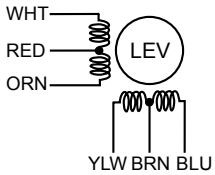
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61)

Ambient temperature thermistor (RT65)

Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance with a tester.

Refer to 11-6. "Test point diagram and voltage", 1. "Outdoor electronic control P.C. board" or 4. "Inverter P.C. board", for the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)

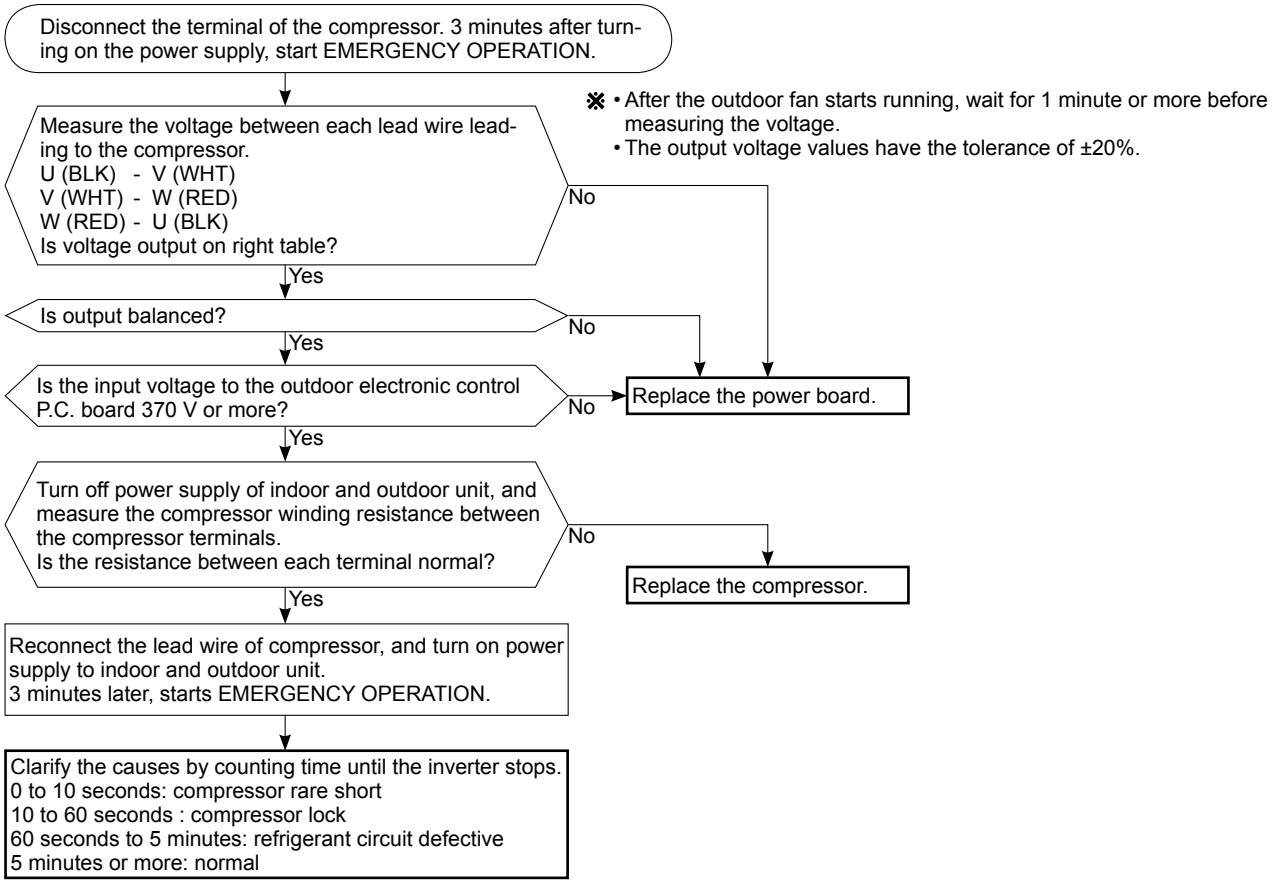
Fin temperature thermistor (RT64)</td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.

Refer to 11-6. "Test point diagram and voltage", 1. "Outdoor electronic control P.C. board" or 4. "Inverter P.C. board", for the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor</td><td>Measure the resistance between terminals using a tester.
(Winding temperature : -10 ~ 40°C)
<table><tr><th colspan="2">Normal</th></tr><tr><th>E1 E2</th><th>E3</th></tr><tr><td>0.40 ~ 0.49 Ω</td><td>0.86 ~ 1.06 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>Outdoor fan motor</td><td>Measure the resistance between lead wires using a tester.
(Part temperature : -10 ~ 40°C)
<table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>RED – BLK</td><td rowspan="3">13.4 ~ 16.4 Ω</td></tr><tr><td>BLK – WHT</td></tr><tr><td>WHT – RED</td></tr></table></td><td>  </td></tr>
<tr><td>R. V. coil</td><td>Measure the resistance using a tester.
(Part temperature : -10 ~ 40°C)
<table><tr><th colspan="2">Normal</th></tr><tr><th>E1 E2</th><th>E3</th></tr><tr><td>2.6 ~ 3.3 kΩ</td><td>1.32 ~ 1.62 Ω</td></tr></table></td><td></td></tr>
<tr><td>Linear expansion valve</td><td>Measure the resistance using a tester.
(Part temperature : -10 ~ 40°C)
<table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>WHT – RED</td><td rowspan="4">37.4 ~ 53.9 Ω</td></tr><tr><td>RED – ORN</td></tr><tr><td>YLW – BRN</td></tr><tr><td>BRN – BLU</td></tr></table></td><td>  </td></tr>
</table>

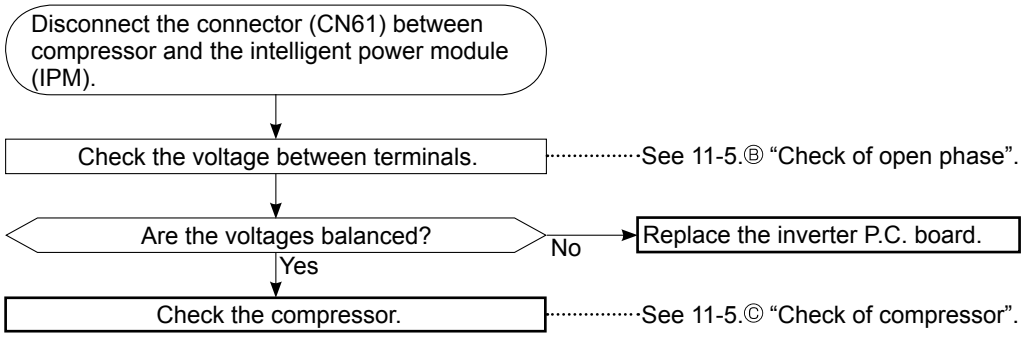
11-5. TROUBLESHOOTING FLOW

Ⓐ How to check inverter/compressor

MUZ-GB50VA- E1 / E2


Disconnect the terminal of the compressor. 3 minutes after turning on the power supply, start EMERGENCY OPERATION.
※ • After the outdoor fan starts running, wait for 1 minute or more before measuring the voltage.
• The output voltage values have the tolerance of ±20%.
Measure the voltage between each lead wire leading to the compressor.
U (BLK) - V (WHT)
V (WHT) - W (RED)
W (RED) - U (BLK)
Is voltage output on right table?
No
Yes
Is output balanced?
No
Yes
Is the input voltage to the outdoor electronic control P.C. board 370 V or more?
No
Replace the power board.
Yes
Turn off power supply of indoor and outdoor unit, and measure the compressor winding resistance between the compressor terminals.
Is the resistance between each terminal normal?
No
Replace the compressor.
Yes
Reconnect the lead wire of compressor, and turn on power supply to indoor and outdoor unit.
3 minutes later, starts EMERGENCY OPERATION.
Clarify the causes by counting time until the inverter stops.
0 to 10 seconds: compressor rare short
10 to 60 seconds : compressor lock
60 seconds to 5 minutes: refrigerant circuit defective
5 minutes or more: normal

MUZ-GB50VA- E3


Disconnect the connector (CN61) between compressor and the intelligent power module (IPM).
Check the voltage between terminals.
See 11-5.Ⓑ “Check of open phase”.
Are the voltages balanced?
No
Replace the inverter P.C. board.
Yes
Check the compressor.
See 11-5.Ⓒ “Check of compressor”.

Ⓑ Check of open phase

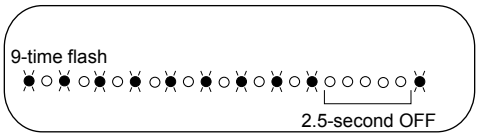
MUZ-GB50VA- E3

● With the connector between the compressor and the intelligent power module disconnected, activate the inverter and check if the inverter is normal by measuring the balance of voltage between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

<< Operation method>>
Start cooling or heating operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION : Refer to 8-3.)
<<Measurement point>>
At 3 points
BLK (U) - WHT (V)
BLK (U) - RED (W)
WHT (V) - RED (W)

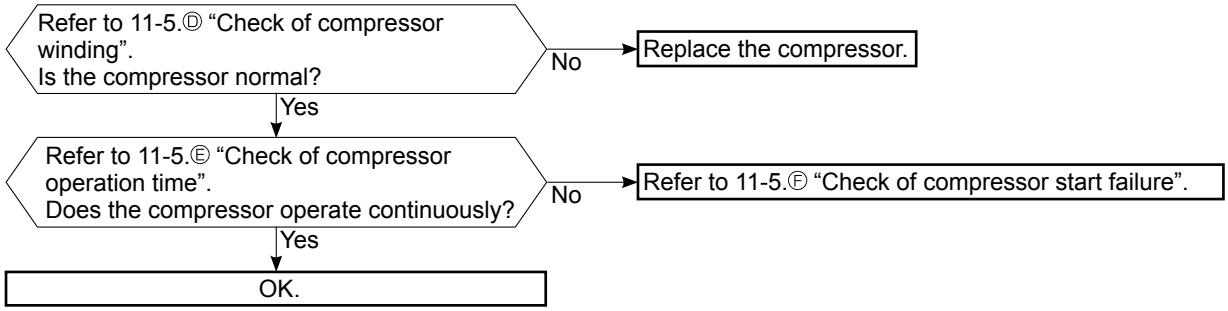
Measure AC voltage between the lead wires at 3 points.



NOTE: 1. Output voltage varies according to power supply voltage.
2. Measure the voltage by analog type tester.
3. During this check, LED of the inverter P.C. board flashes 9 times. (Refer to 11-6.4.)

Ⓒ Check of compressor

MUZ-GB50VA- E3



Ⓓ Check of compressor winding

MUZ-GB50VA- E3

● Disconnect the connector (CN61) between the compressor and intelligent power module, and measure the resistance between the compressor terminals.
<<Measurement point>>
at 3 points
BLK-WHT
BLK-RED
WHT-RED

※ Measure the resistance between the lead wires at 3 points.

<<Judgement>>
Refer to 11-4.
0 [Ω] ·····Abnormal [short]
Infinite [Ω] ·····Abnormal [open]
NOTE: Be sure to zero the ohmmeter before measurement.

Ⓔ Check of compressor operation time

MUZ-GB50VA- E3

●Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.

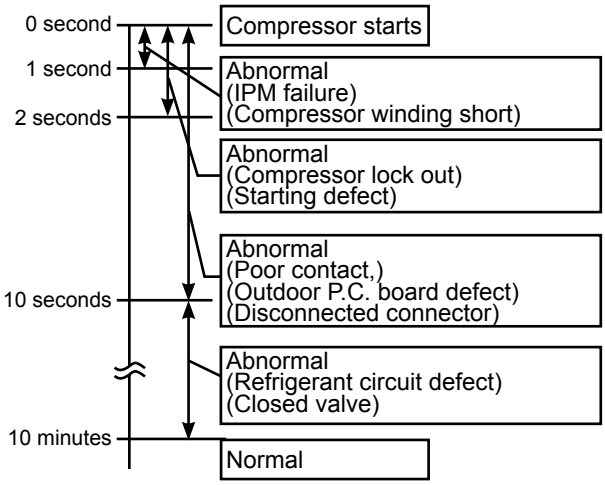
<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit.
(TEST RUN OPERATION : Refer to 8-3.)

<<Measurement>>

Measure the time from the start of compressor to the stop of compressor due to overcurrent.

<<Judgement>>



Ⓕ Check of compressor start failure

MUZ-GB50VA- E3

Confirm that 1~4 is normal.
•Electrical circuit check
1. Contact of the compressor connector (including CN61)
2. Output voltage of inverter P.C. board and balance of them (See 11-5.Ⓑ)
3. Direct current voltage between DB61(+) and (-) on the inverter P.C.board
4. Voltage between outdoor terminal block S1-S2

↓

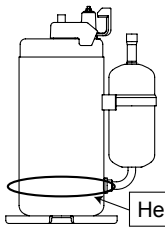
Does the compressor run for 10 seconds or more after it starts? → Yes → Check the refrigerant circuit. Check the stop valve.

↓ No

After the compressor is heated with a drier, does the compressor start? ※1 → No → Replace the compressor.

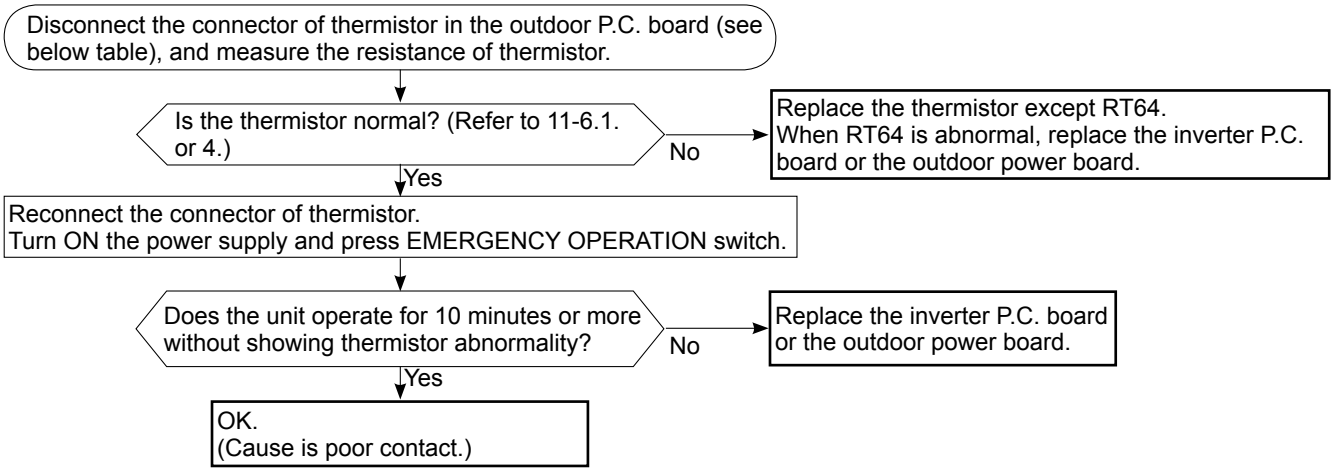
↓ Yes

Compressor start failure. Activate pre-heat control. (Refer to 10-2. "PRE-HEAT CONTROL SETTING")



※1
Heat the compressor with a drier for about 20 minutes. Do not recover refrigerant gas while heating.

Ⓖ Check of outdoor thermistors


Disconnect the connector of thermistor in the outdoor P.C. board (see below table), and measure the resistance of thermistor.
Is the thermistor normal? (Refer to 11-6.1. or 4.)
No
Replace the thermistor except RT64.
When RT64 is abnormal, replace the inverter P.C. board or the outdoor power board.
Yes
Reconnect the connector of thermistor.
Turn ON the power supply and press EMERGENCY OPERATION switch.
Does the unit operate for 10 minutes or more without showing thermistor abnormality?
No
Replace the inverter P.C. board or the outdoor power board.
Yes
OK.
(Cause is poor contact.)

MUZ-GB50VA- E1 / E2

Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN661 pin 1 and pin 2	Outdoor electronic control P.C. board
Discharge temperature	RT62	Between CN661 pin 3 and pin 4	
Outdoor heat exchanger temperature	RT68	Between CN661 pin 7 and pin 8	
Ambient temperature	RT65	Between CN663 pin 1 and pin 2	
Fin temperature	RT64	Between CN3 pin 1 and pin 2	Outdoor power board

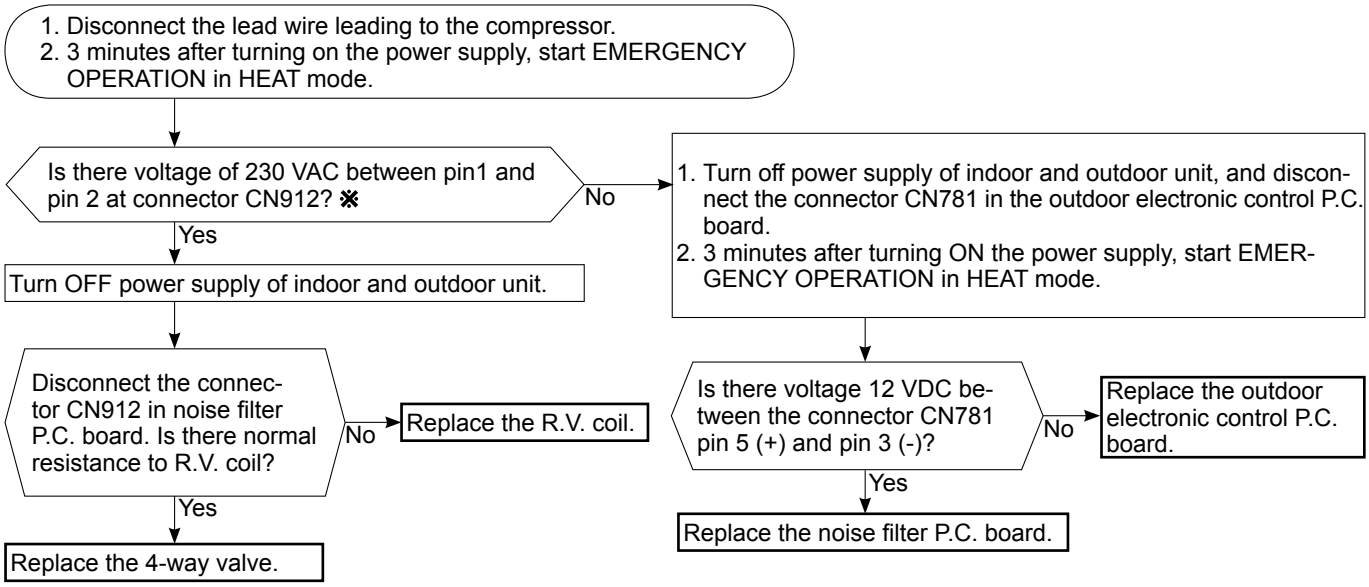
MUZ-GB50VA- E3

Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin3 and pin4	
Fin temperature	RT64	Between CN642 pin1 and pin2	
Ambient temperature	RT65	Between CN643 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN644 pin1 and pin3	

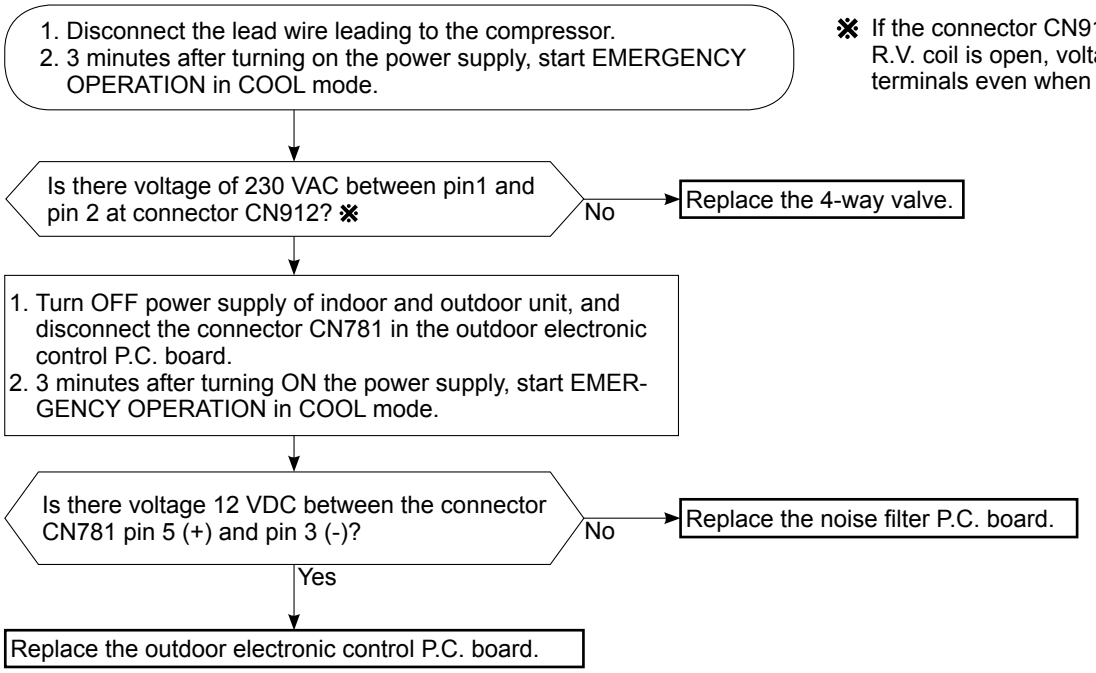
Ⓗ Check of R.V. coil

MUZ-GB50VA- E1 / E2

• Heating operation does not work.


1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in HEAT mode.
Is there voltage of 230 VAC between pin1 and pin 2 at connector CN912? ※
No
1. Turn off power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in HEAT mode.
Yes
Turn OFF power supply of indoor and outdoor unit.
Disconnect the connector CN912 in noise filter P.C. board. Is there normal resistance to R.V. coil?
No
Replace the R.V. coil.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the outdoor electronic control P.C. board.
Yes
Yes
Replace the noise filter P.C. board.
Replace the 4-way valve.

• Cooling operation does not work.

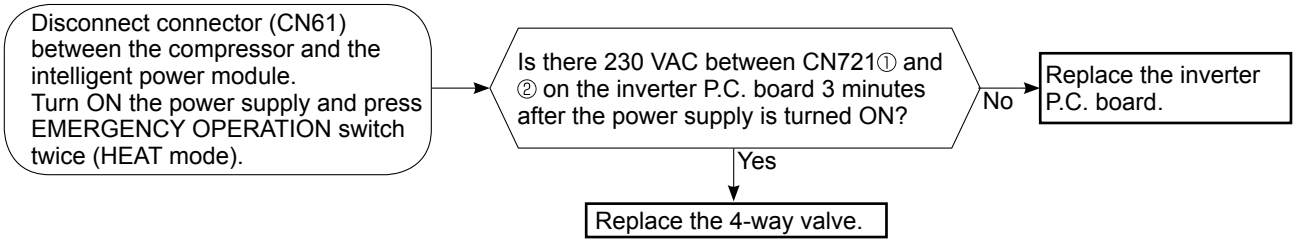

1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage of 230 VAC between pin1 and pin 2 at connector CN912? ※
No
Replace the 4-way valve.
1. Turn OFF power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning ON the power supply, start EMERGENCY OPERATION in COOL mode.
Is there voltage 12 VDC between the connector CN781 pin 5 (+) and pin 3 (-)?
No
Replace the noise filter P.C. board.
Yes
Replace the outdoor electronic control P.C. board.

※ If the connector CN912 is not connected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

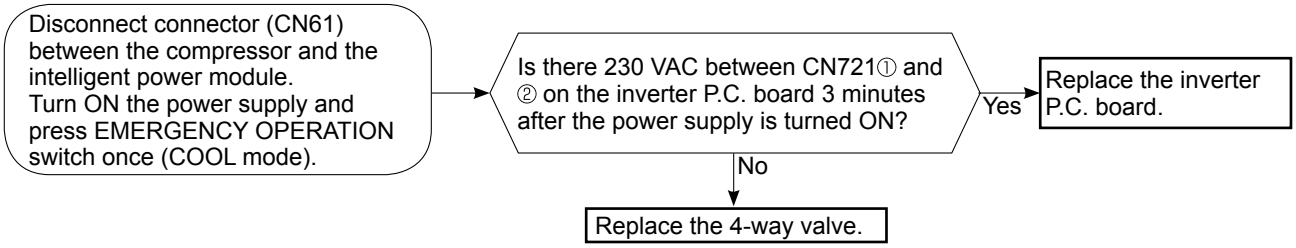
MUZ-GB50VA- E3

※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
※ In case CN721 is not connected or R.V. coil is open, voltage is generated between the terminal pins of the connector although any signal is not being transmitted to R.V. coil.
Check if CN721 is connected.

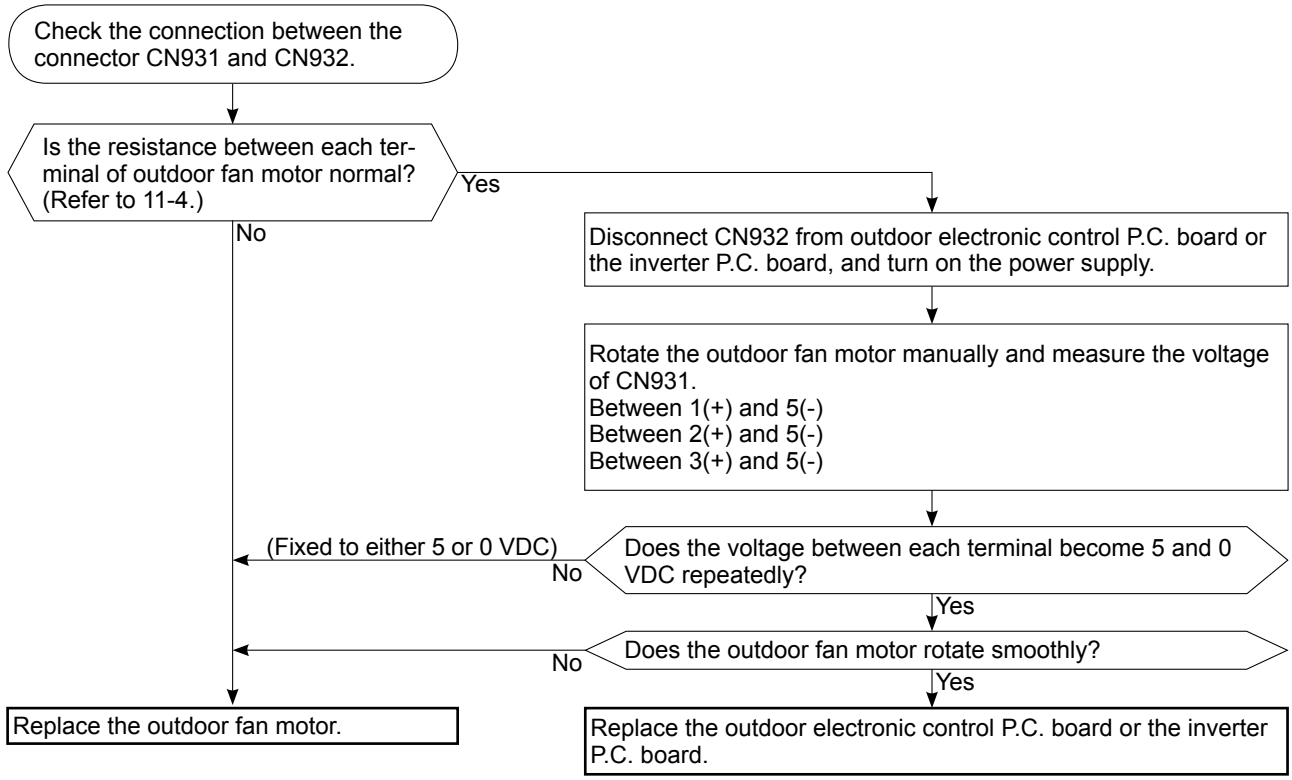
Unit operates COOL mode even if it is set to HEAT mode.


Disconnect connector (CN61) between the compressor and the intelligent power module.
Turn ON the power supply and press EMERGENCY OPERATION switch twice (HEAT mode).
Is there 230 VAC between CN721① and ② on the inverter P.C. board 3 minutes after the power supply is turned ON?
No
Replace the inverter P.C. board.
Yes
Replace the 4-way valve.

Unit operates HEAT mode even if it is set to COOL mode.

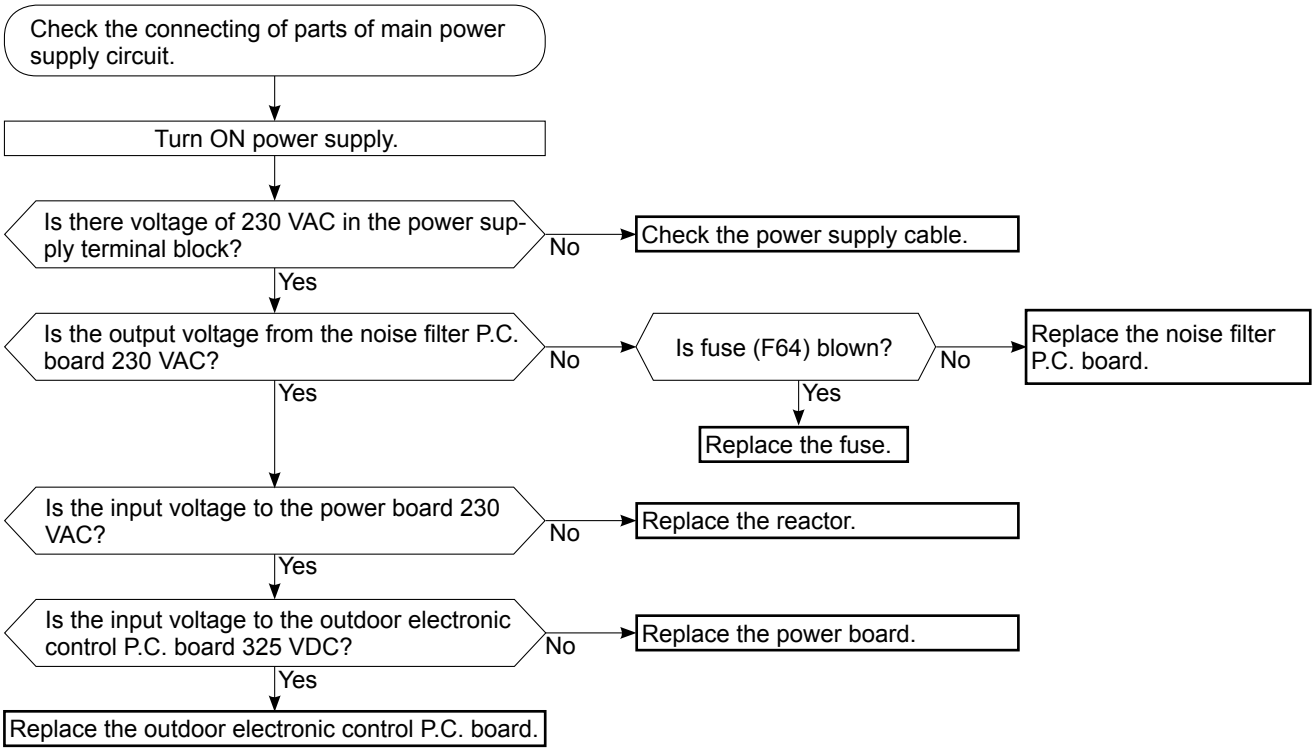

Disconnect connector (CN61) between the compressor and the intelligent power module.
Turn ON the power supply and press EMERGENCY OPERATION switch once (COOL mode).
Is there 230 VAC between CN721① and ② on the inverter P.C. board 3 minutes after the power supply is turned ON?
Yes
Replace the inverter P.C. board.
No
Replace the 4-way valve.

ⓛ Check of outdoor fan motor

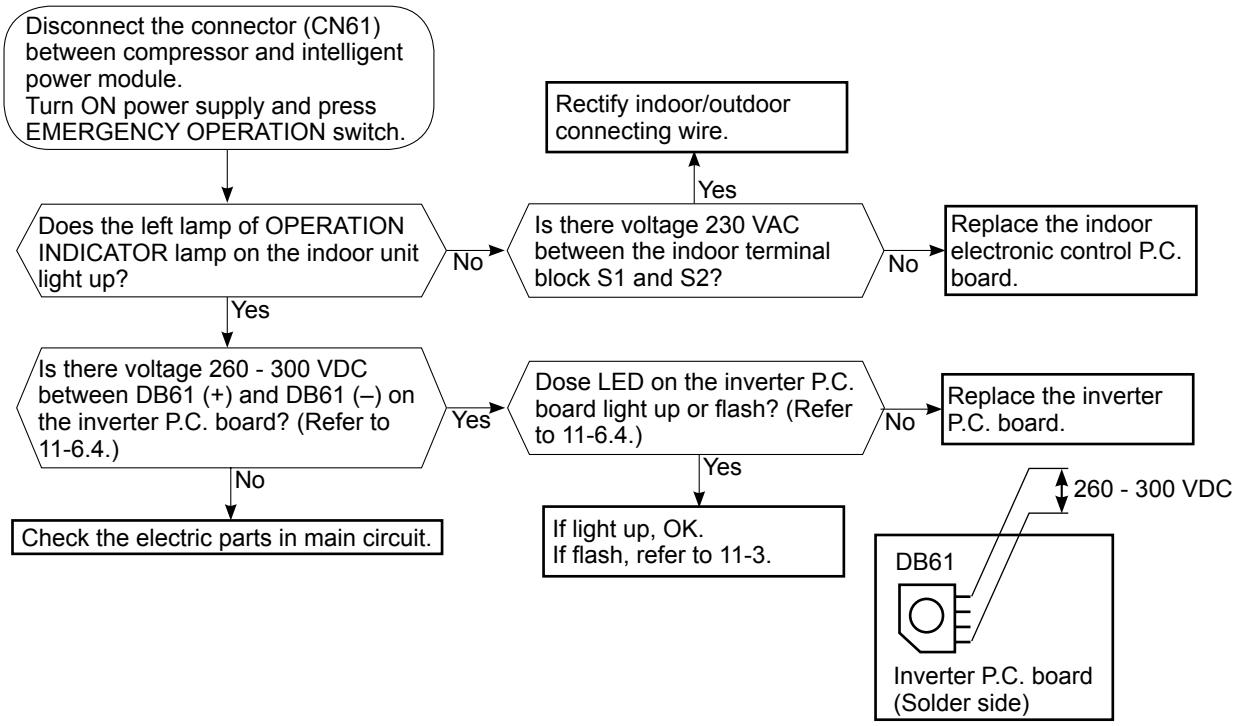

Check the connection between the connector CN931 and CN932.
Is the resistance between each terminal of outdoor fan motor normal? (Refer to 11-4.)
Yes
No
Disconnect CN932 from outdoor electronic control P.C. board or the inverter P.C. board, and turn on the power supply.
Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)
Does the voltage between each terminal become 5 and 0 VDC repeatedly?
(Fixed to either 5 or 0 VDC)
No
Yes
Does the outdoor fan motor rotate smoothly?
No
Yes
Replace the outdoor fan motor.
Replace the outdoor electronic control P.C. board or the inverter P.C. board.

Ⓙ Check of power supply

MUZ-GB50VA- E1 / E2


Check the connecting of parts of main power supply circuit.
Turn ON power supply.
Is there voltage of 230 VAC in the power supply terminal block?
No
Check the power supply cable.
Yes
Is the output voltage from the noise filter P.C. board 230 VAC?
No
Is fuse (F64) blown?
No
Replace the noise filter P.C. board.
Yes
Yes
Replace the fuse.
Is the input voltage to the power board 230 VAC?
No
Replace the reactor.
Yes
Is the input voltage to the outdoor electronic control P.C. board 325 VDC?
No
Replace the power board.
Yes
Replace the outdoor electronic control P.C. board.

MUZ-GB50VA- E3


Disconnect the connector (CN61) between compressor and intelligent power module.
Turn ON power supply and press EMERGENCY OPERATION switch.
Rectify indoor/outdoor connecting wire.
Yes
Does the left lamp of OPERATION INDICATOR lamp on the indoor unit light up?
No
Is there voltage 230 VAC between the indoor terminal block S1 and S2?
No
Replace the indoor electronic control P.C. board.
Yes
Is there voltage 260 - 300 VDC between DB61 (+) and DB61 (–) on the inverter P.C. board? (Refer to 11-6.4.)
Yes
Dose LED on the inverter P.C. board light up or flash? (Refer to 11-6.4.)
No
Replace the inverter P.C. board.
Yes
No
Check the electric parts in main circuit.
If light up, OK.
If flash, refer to 11-3.
260 - 300 VDC
DB61
Inverter P.C. board
(Solder side)

Ⓚ Check of LEV

MUZ-GB50VA- E1 / E2

Turn ON power supply to the outdoor unit after checking LEV coil is mounted to the LEV body securely.

↓

Is "click - click" sound heard?
Or, do you feel vibration of the LEV coil with a hand?
Yes → Normal

No ↓

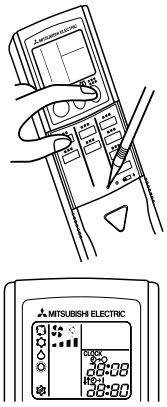
Disconnect the connector CN795.
Is there normal resistance to LEV coil?
Yes → Replace the outdoor electronic control P.C. board.

No ↓

Replace the LEV coil.

MUZ-GB50VA- E3

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
Hold down the other two buttons for another 3 seconds. Confirm that the indicators on the LCD screen shown in the right figures are all displayed.
Then release the buttons.



↓

Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

↓

Expansion valve operates in full-opening direction.

↓

Do you hear the expansion valve "click, click·····"?
Do you feel the expansion valve vibrate on touching it ?
Yes → OK

No ↓

Is LEV coil properly fixed to the expansion valve?
No → Properly fix the LEV coil to the expansion valve.

Yes ↓

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)
Yes →
Measure each voltage between connector pins of CN724 on the inverter P.C. board.
1. Pin③(-) — Pin①(+)
2. Pin④(-) — Pin①(+)
3. Pin⑤(-) — Pin①(+)
4. Pin⑥(-) — Pin①(+)
Is there about 3 ~ 5 VAC between each?
NOTE: Measure the voltage by an analog tester.
No → Replace the inverter P.C. board.

No ↓

Replace the LEV coil.

Yes ↓

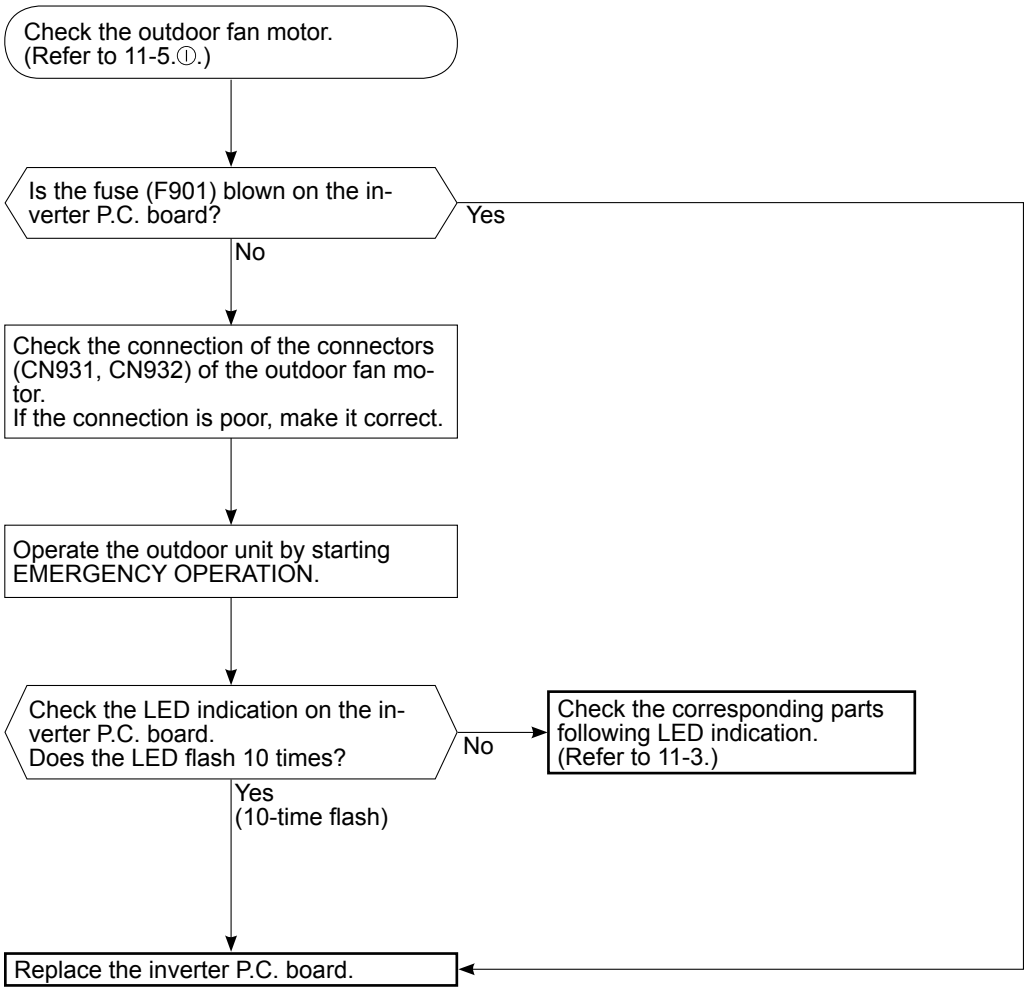
Replace the expansion valve.

※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

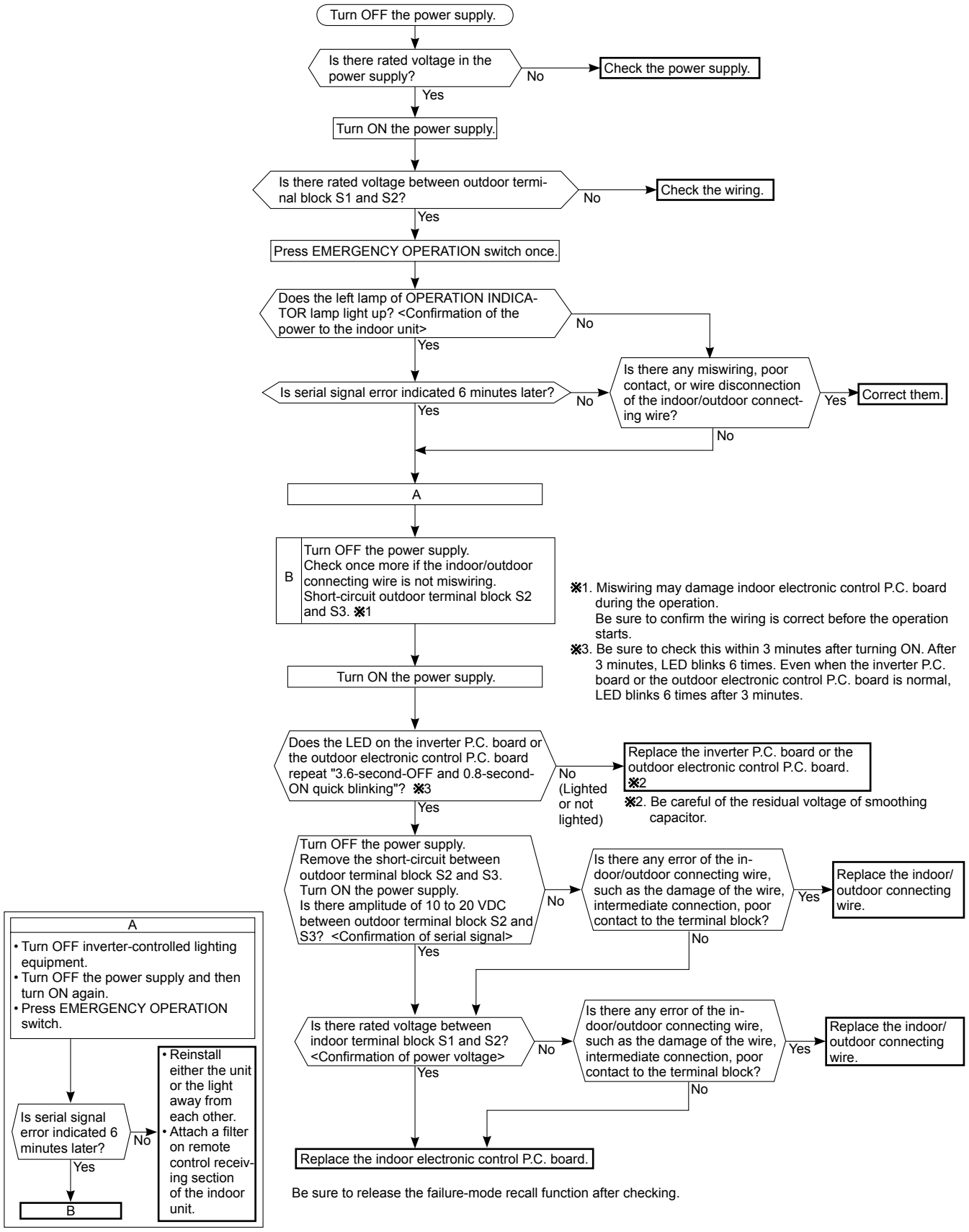
NOTE : After check of LEV, do the undermentioned operations.
1. Turn OFF the power supply and turn ON it again.
2. Press RESET button on the remote controller.

Ⓛ Check of inverter P.C. board

MUZ-GB50VA- E3


Check the outdoor fan motor.
(Refer to 11-5.①.)
Is the fuse (F901) blown on the inverter P.C. board?
Yes
No
Check the connection of the connectors (CN931, CN932) of the outdoor fan motor.
If the connection is poor, make it correct.
Operate the outdoor unit by starting EMERGENCY OPERATION.
Check the LED indication on the inverter P.C. board.
Does the LED flash 10 times?
No
Check the corresponding parts following LED indication.
(Refer to 11-3.)
Yes
(10-time flash)
Replace the inverter P.C. board.

Ⓜ How to check miswiring and serial signal error


Turn OFF the power supply.
Is there rated voltage in the power supply?
No
Check the power supply.
Yes
Turn ON the power supply.
Is there rated voltage between outdoor terminal block S1 and S2?
No
Check the wiring.
Yes
Press EMERGENCY OPERATION switch once.
Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>
No
Yes
Is serial signal error indicated 6 minutes later?
No
Is there any miswiring, poor contact, or wire disconnection of the indoor/outdoor connecting wire?
Yes
Correct them.
Yes
No
A
B
Turn OFF the power supply.
Check once more if the indoor/outdoor connecting wire is not miswiring.
Short-circuit outdoor terminal block S2 and S3. ※1
Turn ON the power supply.
Does the LED on the inverter P.C. board or the outdoor electronic control P.C. board repeat "3.6-second-OFF and 0.8-second-ON quick blinking"? ※3
No (Lighted or not lighted)
Replace the inverter P.C. board or the outdoor electronic control P.C. board. ※2
Yes
Turn OFF the power supply.
Remove the short-circuit between outdoor terminal block S2 and S3.
Turn ON the power supply.
Is there amplitude of 10 to 20 VDC between outdoor terminal block S2 and S3? <Confirmation of serial signal>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
Is there rated voltage between indoor terminal block S1 and S2? <Confirmation of power voltage>
No
Is there any error of the indoor/outdoor connecting wire, such as the damage of the wire, intermediate connection, poor contact to the terminal block?
Yes
Replace the indoor/outdoor connecting wire.
No
Yes
Replace the indoor electronic control P.C. board.
A
• Turn OFF inverter-controlled lighting equipment.
• Turn OFF the power supply and then turn ON again.
• Press EMERGENCY OPERATION switch.
Is serial signal error indicated 6 minutes later?
No
• Reinstall either the unit or the light away from each other.
• Attach a filter on remote control receiving section of the indoor unit.
Yes
B

※1. Miswiring may damage indoor electronic control P.C. board during the operation.
Be sure to confirm the wiring is correct before the operation starts.

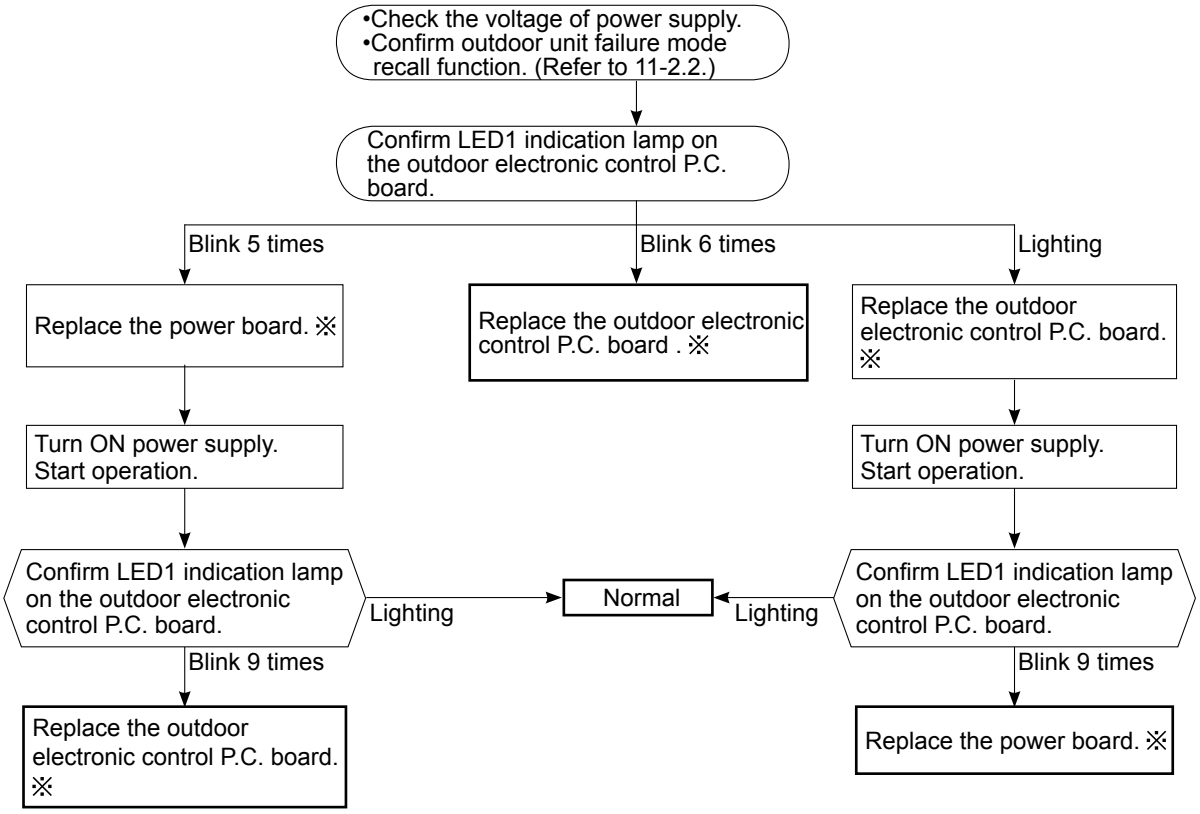
※2. Be careful of the residual voltage of smoothing capacitor.

※3. Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board or the outdoor electronic control P.C. board is normal, LED blinks 6 times after 3 minutes.

Be sure to release the failure-mode recall function after checking.

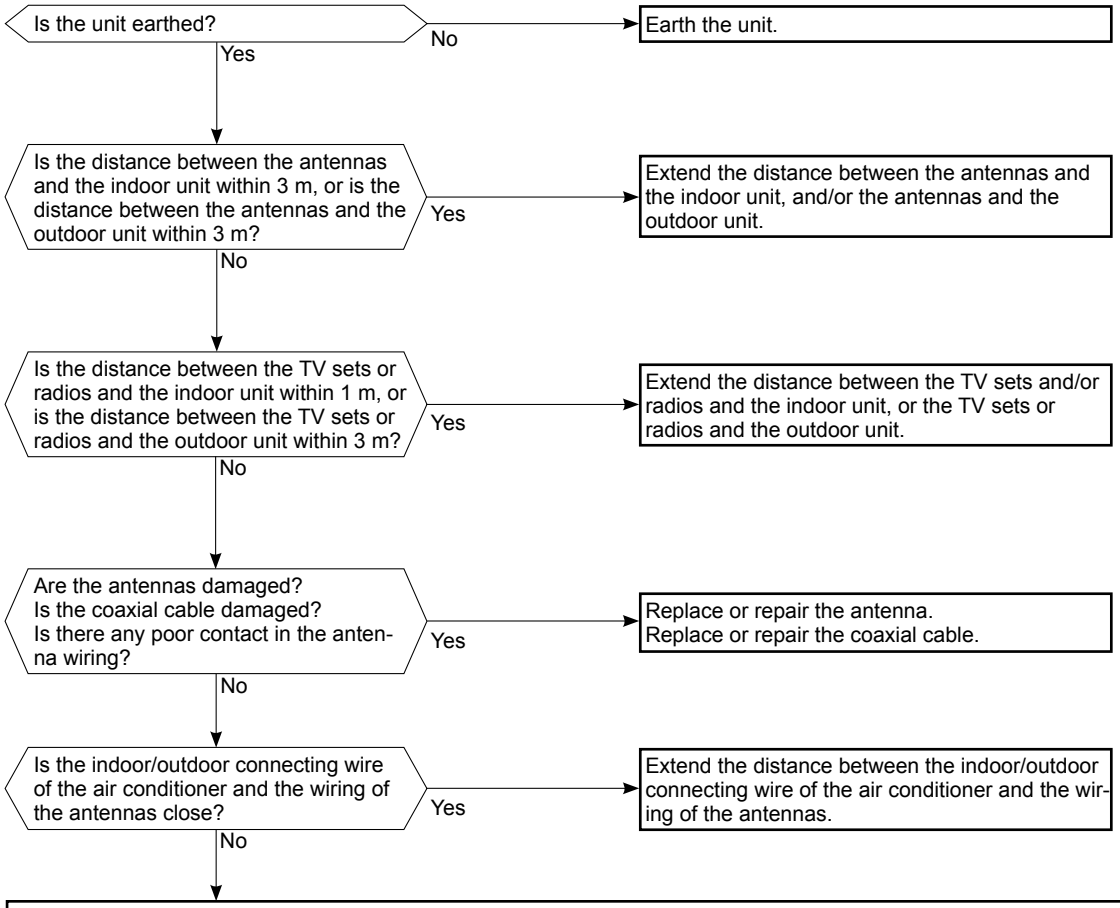
Ⓝ Check of bus-bar voltage

MUZ-GB50VA- E1 **/** E2


•Check the voltage of power supply.
•Confirm outdoor unit failure mode recall function. (Refer to 11-2.2.)
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 5 times
Blink 6 times
Lighting
Replace the power board. ※
Replace the outdoor electronic control P.C. board . ※
Replace the outdoor electronic control P.C. board. ※
Turn ON power supply. Start operation.
Turn ON power supply. Start operation.
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Lighting
Normal
Lighting
Confirm LED1 indication lamp on the outdoor electronic control P.C. board.
Blink 9 times
Blink 9 times
Replace the outdoor electronic control P.C. board. ※
Replace the power board. ※

※ Turn OFF power supply before removing P.C. board.

Ⓞ Electromagnetic noise enters into TV sets or radios

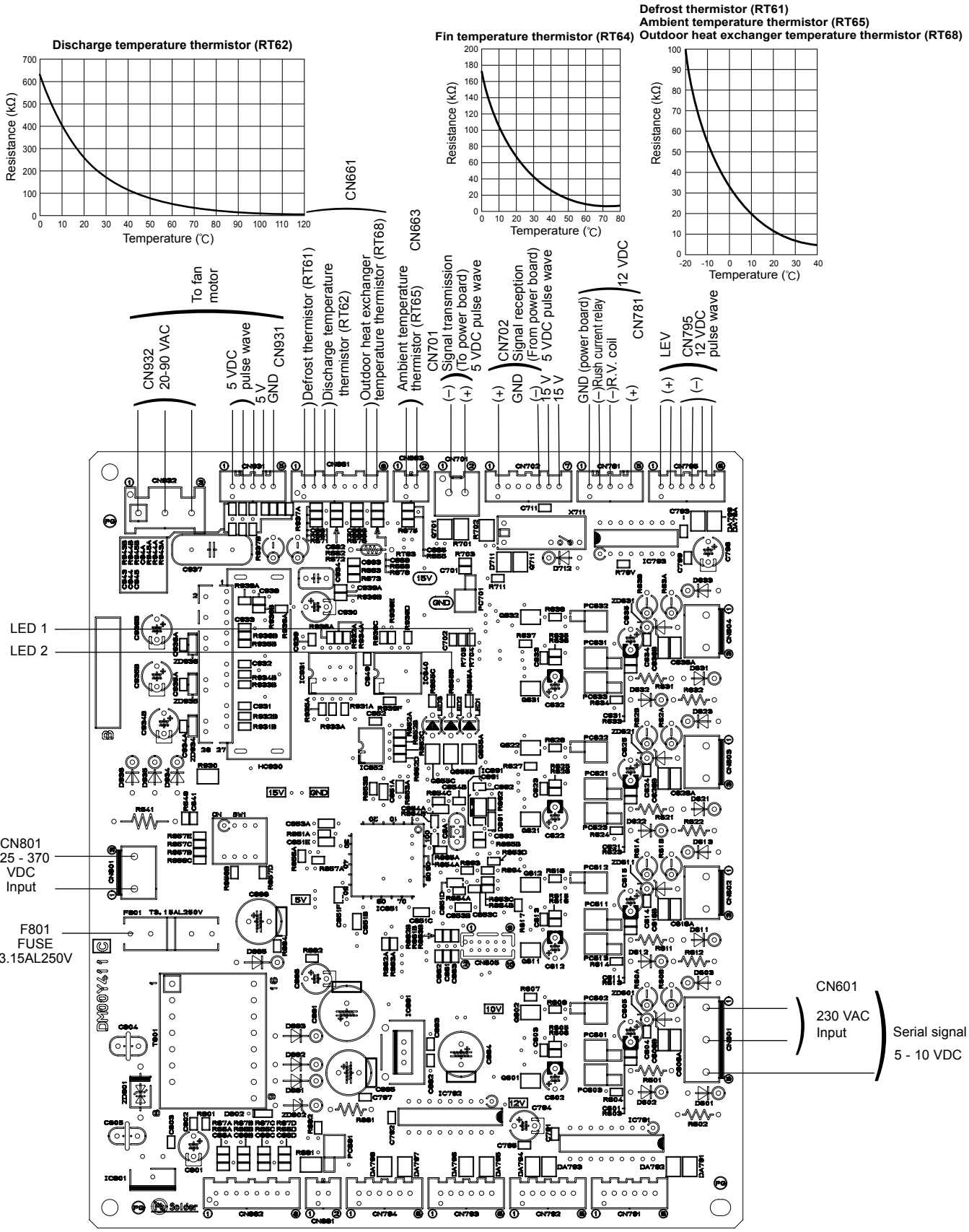

Is the unit earthed?
No
Earth the unit.
Yes
Is the distance between the antennas and the indoor unit within 3 m, or is the distance between the antennas and the outdoor unit within 3 m?
Yes
Extend the distance between the antennas and the indoor unit, and/or the antennas and the outdoor unit.
No
Is the distance between the TV sets or radios and the indoor unit within 1 m, or is the distance between the TV sets or radios and the outdoor unit within 3 m?
Yes
Extend the distance between the TV sets and/or radios and the indoor unit, or the TV sets or radios and the outdoor unit.
No
Are the antennas damaged?
Is the coaxial cable damaged?
Is there any poor contact in the antenna wiring?
Yes
Replace or repair the antenna.
Replace or repair the coaxial cable.
No
Is the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas close?
Yes
Extend the distance between the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas.
No

Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the following before asking for service.

1. Devices affected by the electromagnetic noise
   TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of ;
   indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, earth wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
   1) Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
   2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
   3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
   4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

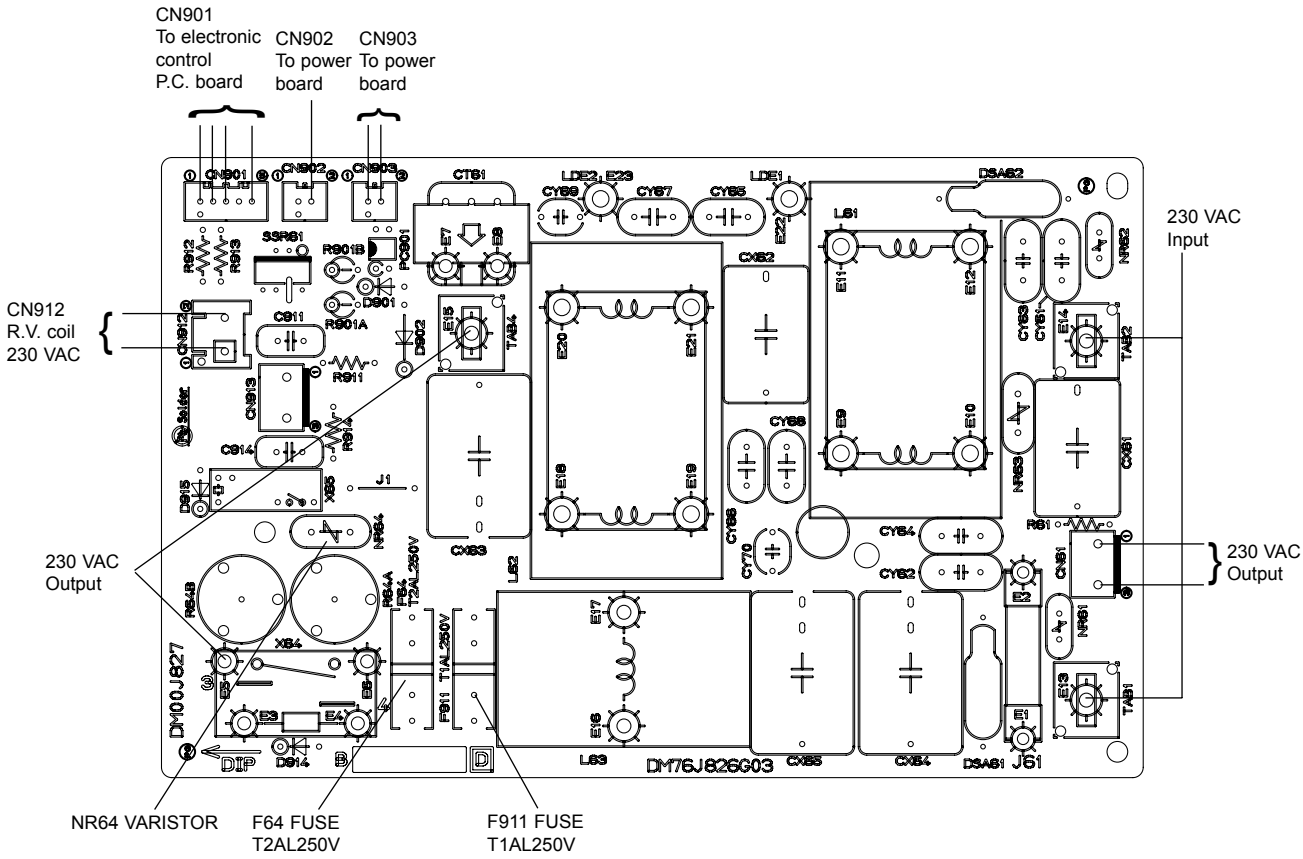
11-6. TEST POINT DIAGRAM AND VOLTAGE

1. Outdoor electronic control P.C. board
MUZ-GB50VA- E1 / E2



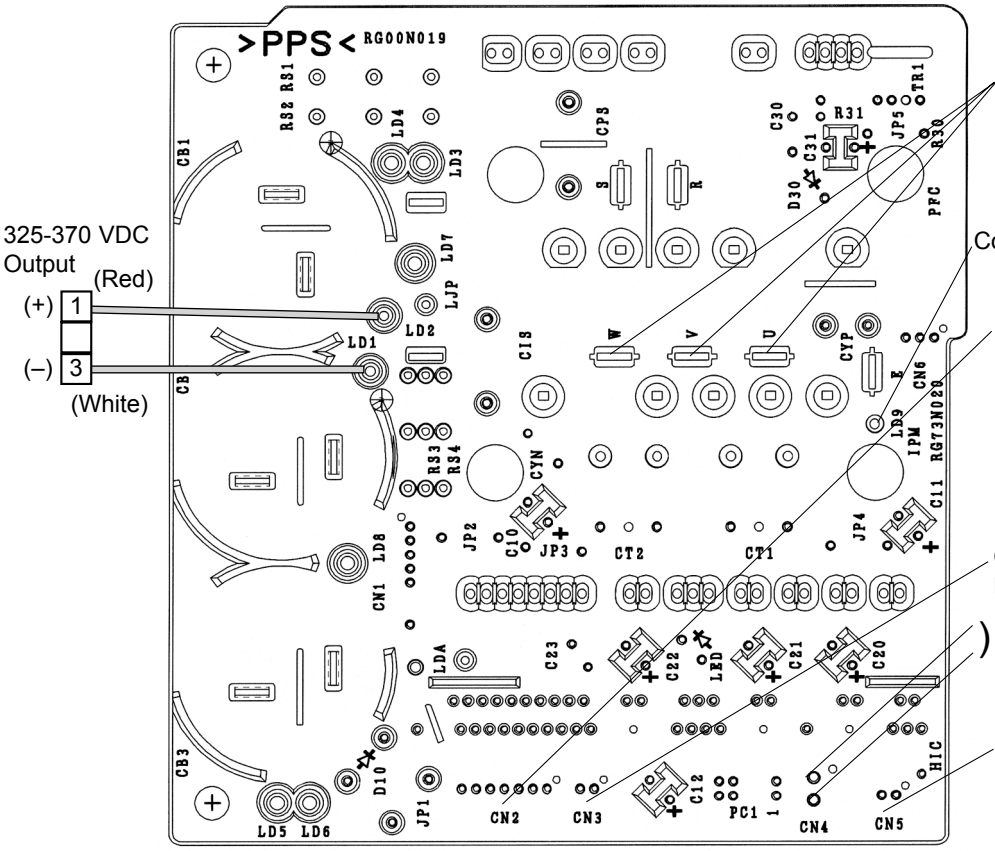
2. Noise filter P.C. board

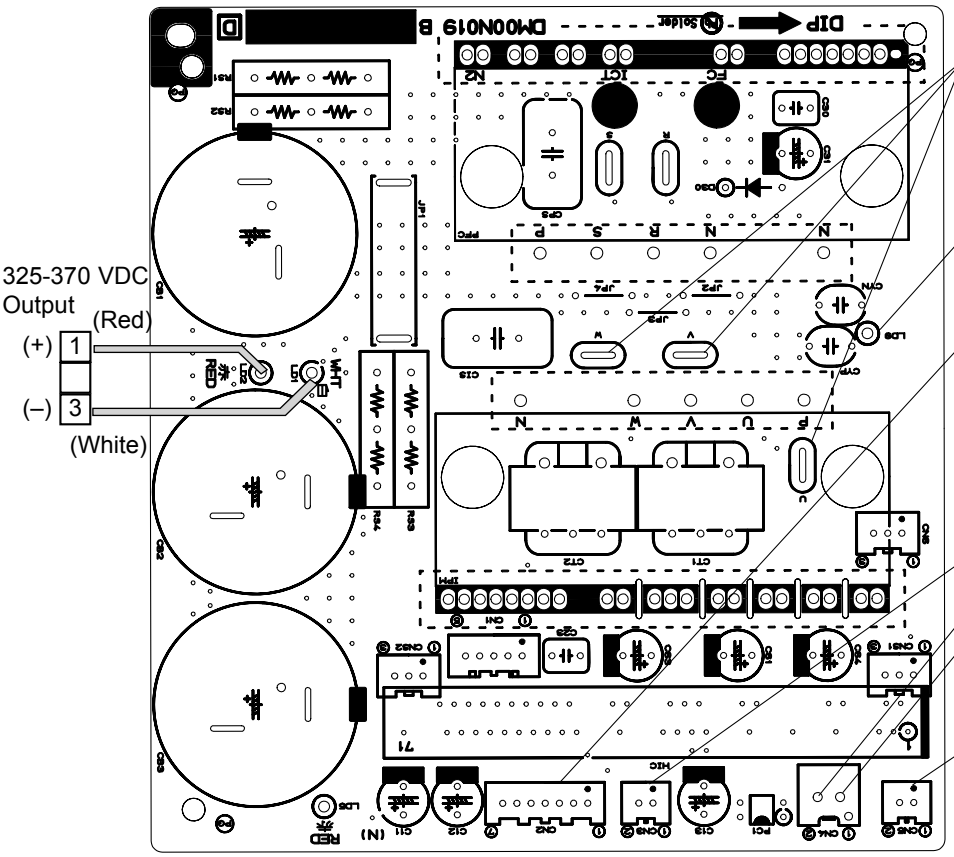
MUZ-GB50VA- E1 / E2



3. Outdoor power board

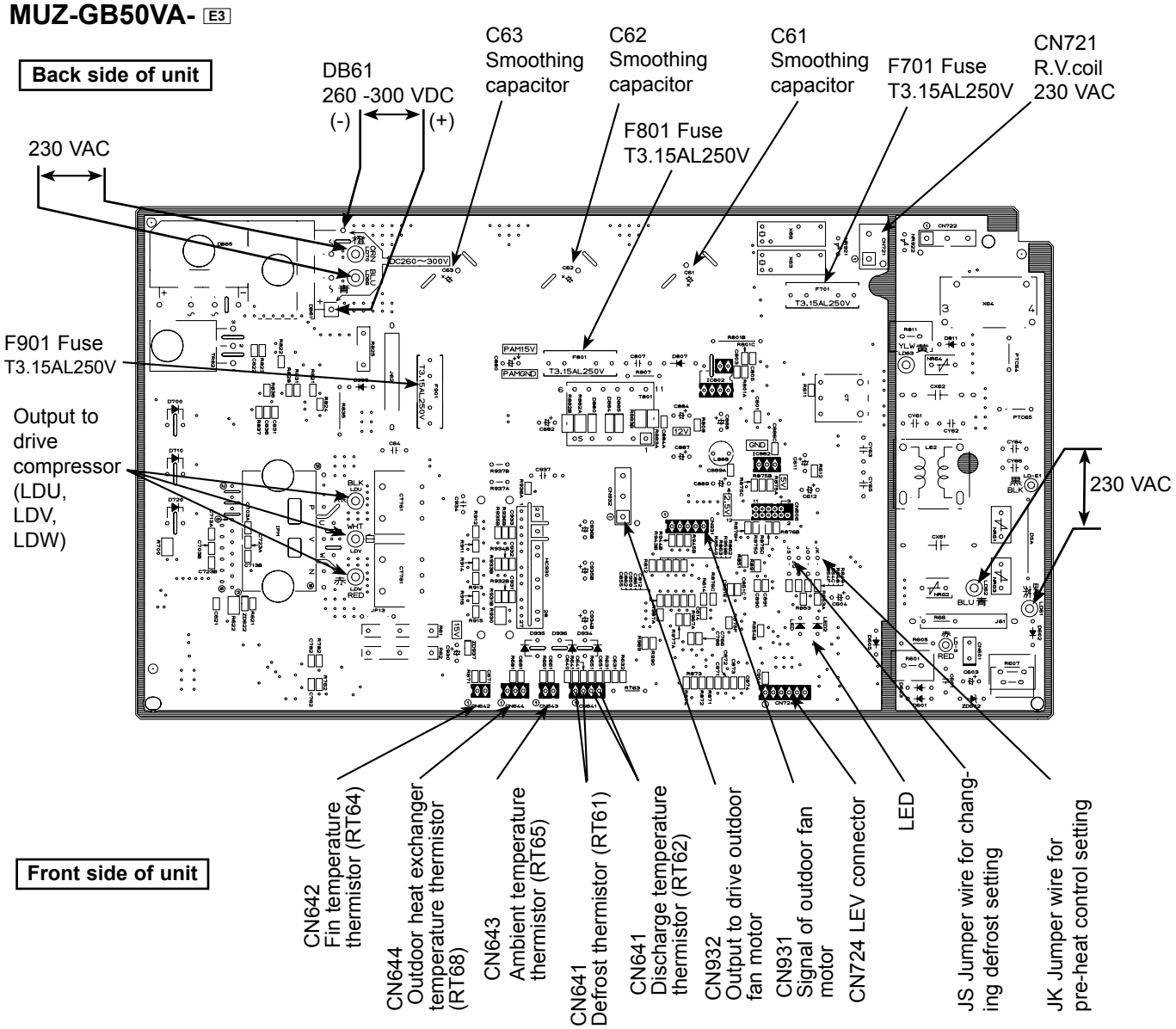
MUZ-GB50VA- E1 / E2

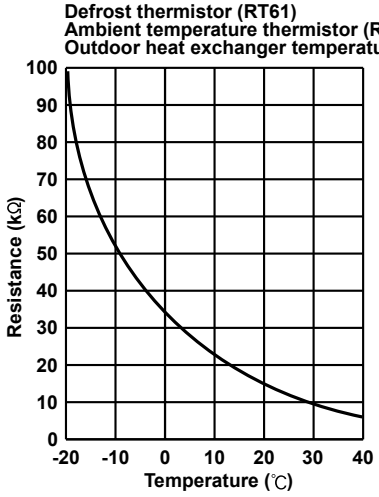


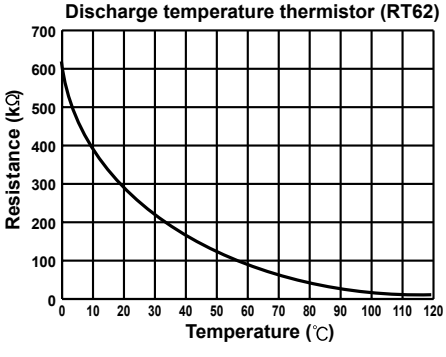


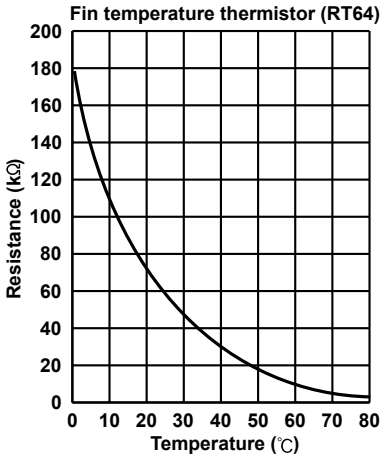
4. Inverter P.C. board

MUZ-GB50VA- E3







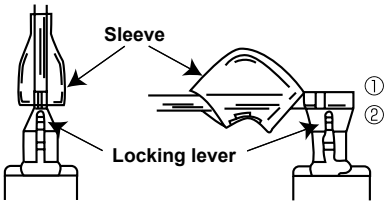


12 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

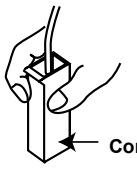
The terminal which has the locking mechanism can be detached as shown below.
There are two types (refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

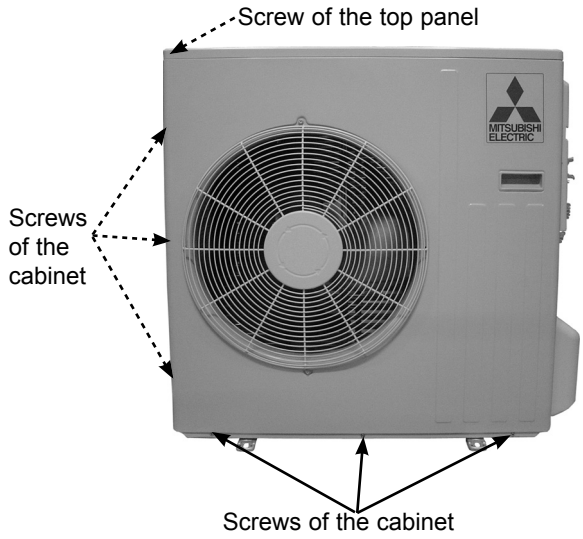
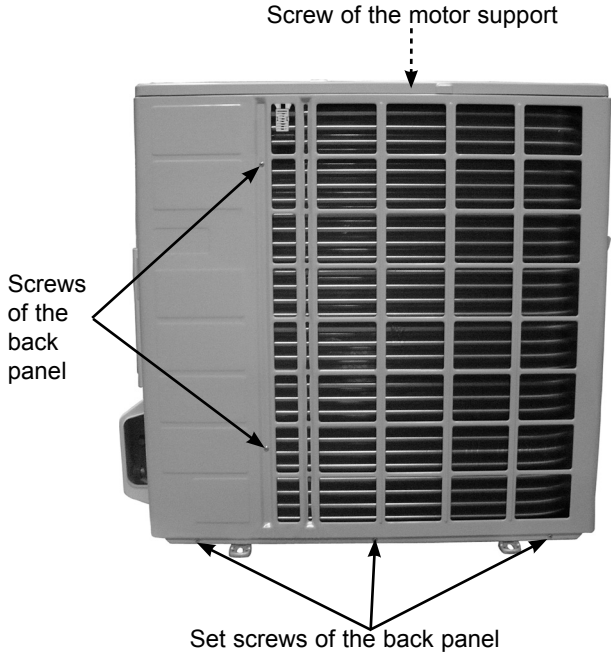
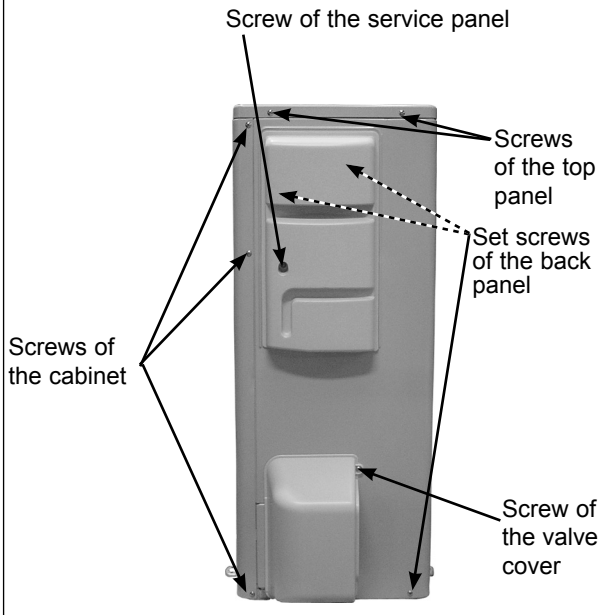
(2) The terminal with this connector has the locking mechanism.



①Hold the sleeve, and pull out the terminal slowly.

MUZ-GB50VA

NOTE: Turn OFF power supply before disassembly.

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the service panel. (2) Remove the screws of the top panel. (3) Remove the screw of the valve cover. (4) Remove the service panel. (5) Remove the top panel. (6) Remove the valve cover. (7) Disconnect the power supply and indoor/outdoor connecting wire. (8) Remove the screws of the cabinet. (9) Remove the cabinet. (10) Remove the screws of the back panel. (11) Remove the back panel.	**Photo 1** 
Photo 3  	**Photo 2** 

OPERATING PROCEDURE

MUZ-GB50VA- E1 / E2

2. Removing the inverter assembly, inverter P.C. board and power board

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Remove the back panel. (Refer to 1.)
(3) Disconnect the following connectors;
<Electronic control P.C. board>
CN931 and CN932 (Fan motor)
CN795 (LEV)
CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor)
CN663 (Ambient temperature thermistor)
<Noise filter P.C. board>
CN912 (R.V. coil)
(4) Remove the compressor connector.
(5) Remove the screws fixing the relay panel.
(6) Remove the inverter assembly.
(7) Disconnect all connectors and lead wires on the electronic control P.C. board.
(8) Remove the electronic control P.C. board from the inverter assembly.
(9) Remove the screws fixing the power board assembly.
(10) Disconnect all connectors and lead wires on the power board.
(11) Remove the power board from the inverter assembly.
(12) Disconnect all connectors and lead wires on the noise filter P.C. board.
(13) Remove the noise filter P.C. board from the inverter assembly.

MUZ-GB50VA- E3

3. Removing the inverter assembly, inverter P.C. board

(1) Remove the cabinet and panels. (Refer to 1.)
(2) Disconnect the lead wire to the reactor and the following connectors;
<Inverter P.C. board>
CN721 (R.V.coil)
CN932 (Fan motor)
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
CN724 (LEV)
(3) Remove the compressor connector (CN61).
(4) Remove the screws fixing the relay panel.
(5) Remove the inverter assembly.
(6) Remove the screw of the earth wire and screw of the T.B.support.
(7) Remove the screw of the PB fixture.
(8) Remove the relay panel from the PB support.
(9) Remove the inverter P.C. board from the inverter assembly.

PHOTOS

Photo 4 (MUZ-GB50VA- E1 / E2)

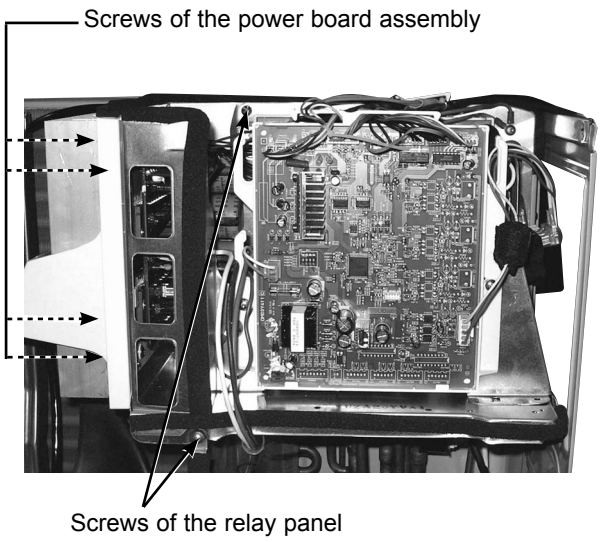


Photo 5 (MUZ-GB50VA- E3)

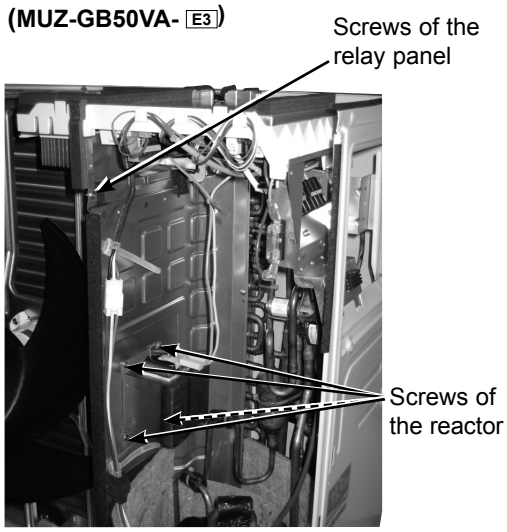
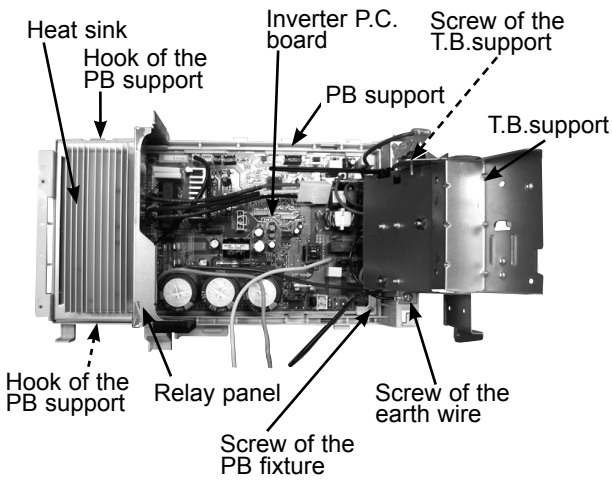
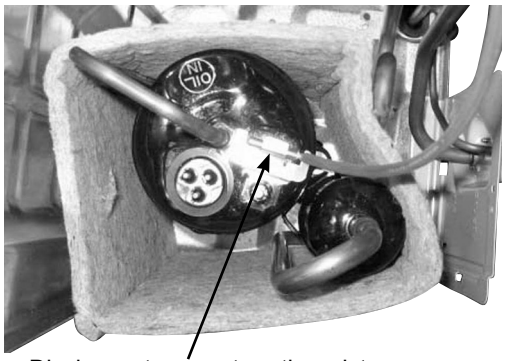
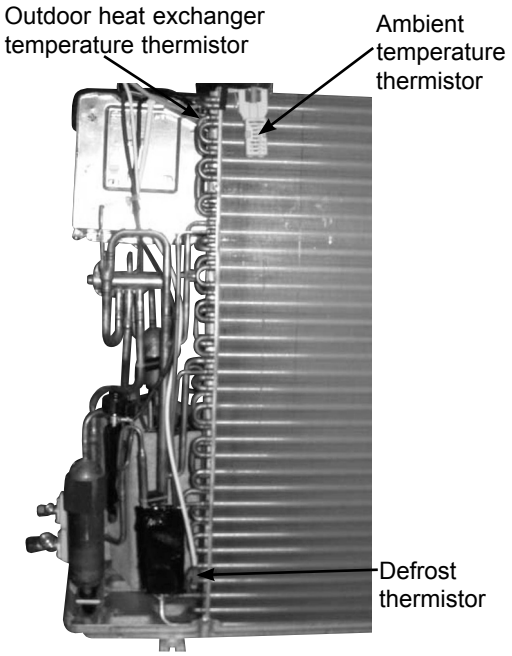
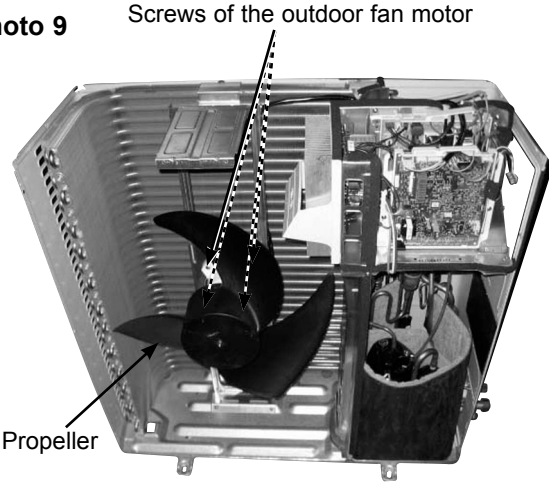
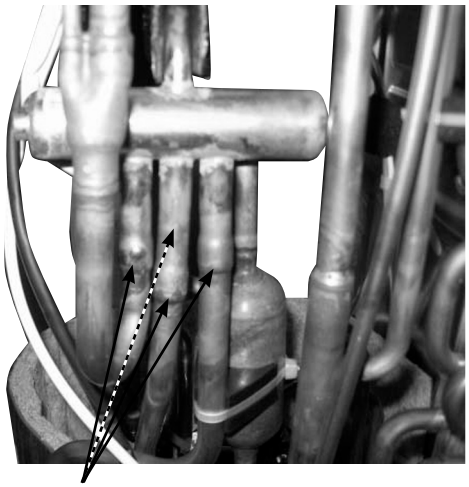
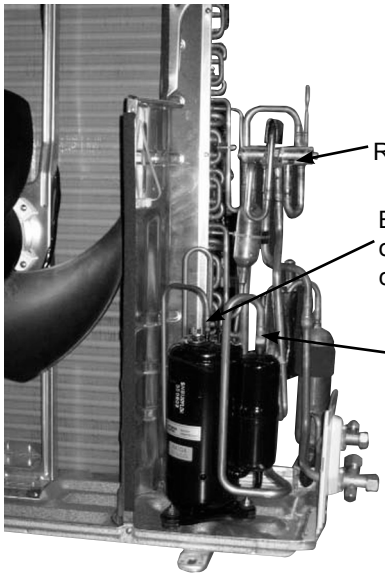
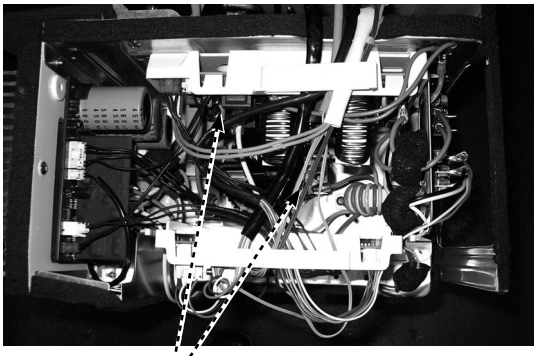


Photo 6 (Inverter assembly : MUZ-GB50VA- E3)



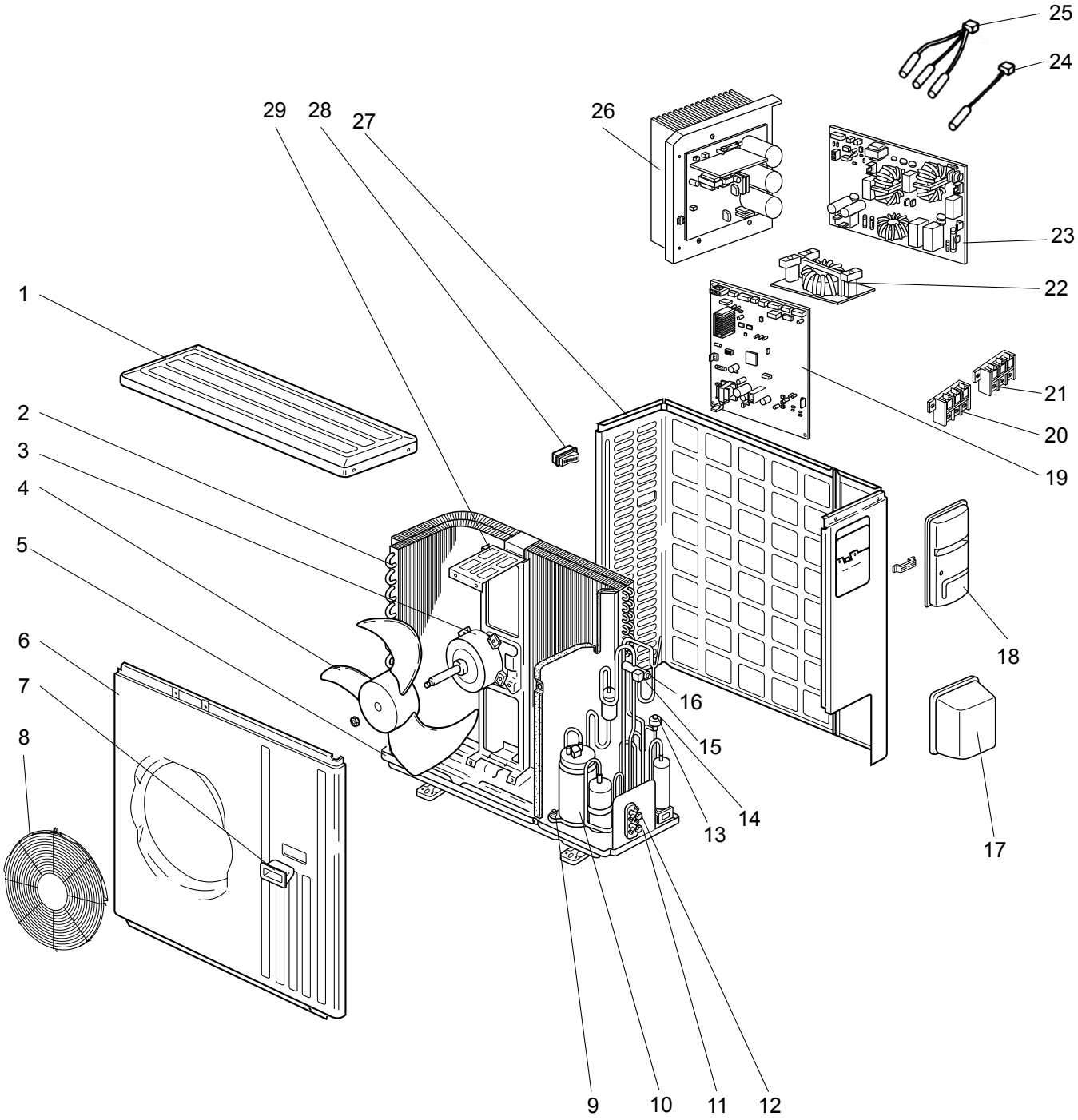
OPERATING PROCEDURE	PHOTOS
4. Removing R.V. coil (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors; **MUZ-GB50VA-** E1 / E2 <Noise filter P.C. board> CN912 (R.V. coil) **MUZ-GB50VA-** E3 <Inverter P.C. board> CN721 (R.V. coil) (4) Remove the R.V. coil. (Photo 11)	**Photo 7**  Discharge temperature thermistor
5. Removing the defrost thermistor, discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors; <Electronic control P.C. board> CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor) CN663 (Ambient temperature thermistor) (4) Pull out the defrost thermistor from its holder. (5) Pull out the discharge temperature thermistor from its holder. (6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (7) Pull out the ambient temperature thermistor from its holder.	**Photo 8**  Outdoor heat exchanger temperature thermistor Ambient temperature thermistor Defrost thermistor
6. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Disconnect the following connectors; **MUZ-GB50VA-** E1 / E2 <Electronic control P.C. board> CN931 and CN932 (Fan motor) **MUZ-GB50VA-** E3 <Inverter P.C. board> CN931 and CN932 (Fan motor) (4) Remove the propeller. (5) Remove the screws fixing the fan motor. (6) Remove the fan motor.	**Photo 9**  Screws of the outdoor fan motor Propeller

OPERATING PROCEDURE	PHOTOS
7. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to 1.) (2) Remove the back panel. (Refer to 1.) (3) Remove the inverter assembly. (Refer to 2.) (4) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm^2 (0 MPa). (5) Detach the brazed part of the suction and the discharge pipe connected with compressor. (6) Remove the compressor nuts. (7) Remove the compressor. (8) Detach the brazed part of 4-way valve and pipe.	**Photo 10**  Brazed parts of 4-way valve **Photo 11**  R.V. coil Brazed part of the dis-charge pipe Brazed part of the suction pipe
8. Removing the reactor (1) Remove the top panel, cabinet, service panel and the back panel. (Refer to 1.) (2) Disconnect the reactor lead wire. (3) Remove the screws of the reactor, and remove the reactor. (Photo 5,12)	**Photo 12 (MUZ-GB50VA- E1 / E2)**  Screws of the reactor

13 RoHS PARTS LIST (RoHS compliant)

MUZ-GB50VA- E1 MUZ-GB50VA- E2

13-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



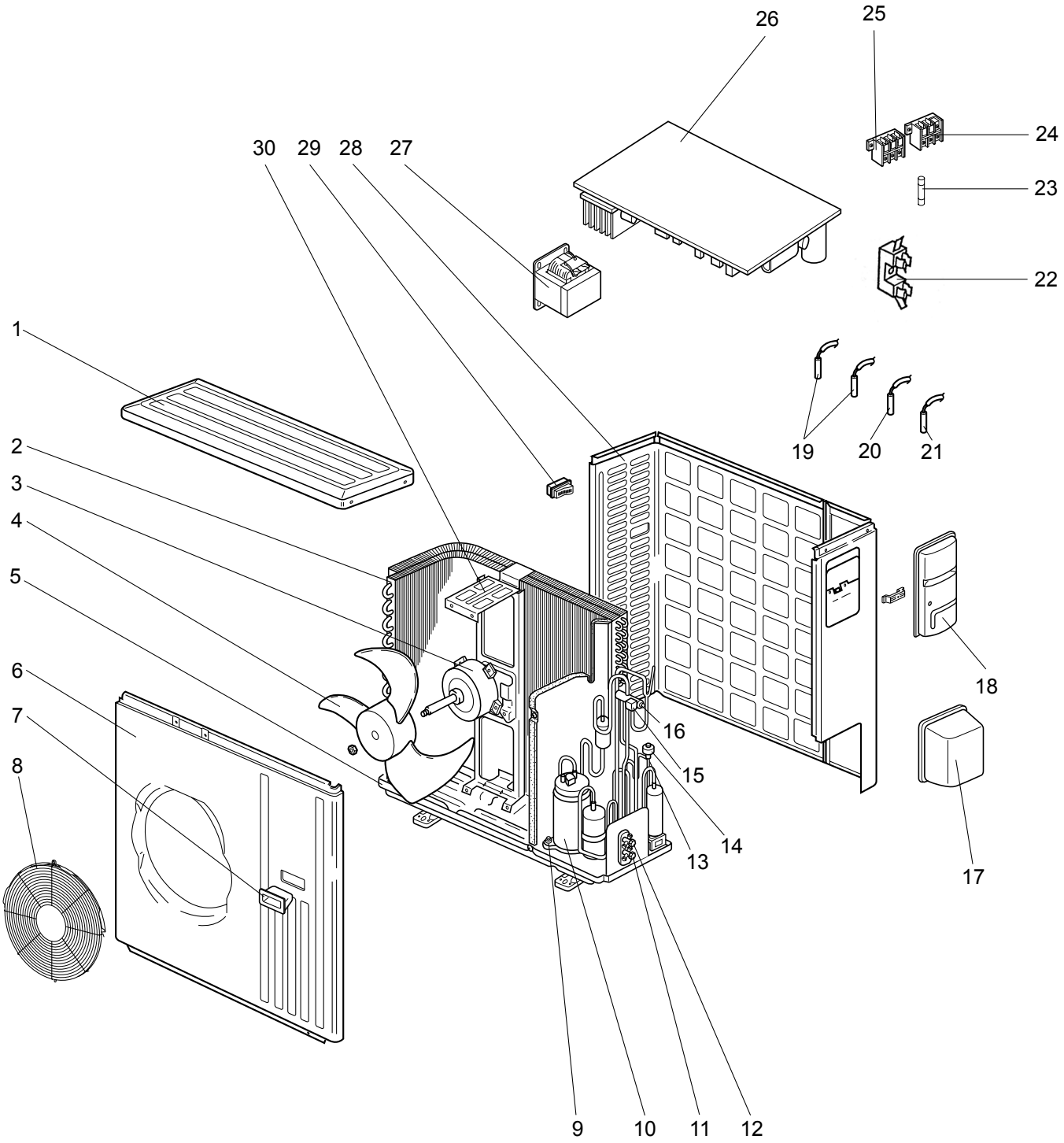
13-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

No.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit MUZ-GB50VA-		Remarks
					E1	E2	
1	G	E12 819 297	TOP PANEL		1	1	
2	G	E12 851 630	OUTDOOR HEAT EXCHANGER		1	1	
3	G	E12 938 301	OUTDOOR FAN MOTOR	MF	1	1	RC0J60-□□
4	G	E12 851 501	PROPELLER		1	1	
5	G	E12 851 290	BASE		1	1	
6	G	E12 819 232	CABINET		1	1	
7	G	E12 819 009	HANDLE		1	1	
8	G	E12 D84 521	FAN GUARD		1	1	Including ice guard
9	G	E12 C34 506	COMPRESSOR RUBBER SET		3	3	3 RUBBERS/SET
10	G	E12 939 900	COMPRESSOR	MC	1		SNB130FLDH1
	G	E12 C06 900				1	SNB130FLEH1
11	G	E12 851 661	STOP VALVE (GAS)		1	1	ø12.7
12	G	E12 821 662	STOP VALVE (LIQUID)		1	1	ø6.35
13	G	E12 851 640	EXPANSION VALVE		1	1	
14	G	E12 851 493	EXPANSION VALVE COIL	LEV	1	1	
15	G	E12 935 490	R.V. COIL	21S4	1	1	
16	G	E12 891 961	4-WAY VALVE		1	1	
17	G	E12 819 650	VALVE COVER		1	1	
18	G	E12 819 245	SERVICE PANEL		1	1	
19	G	E12 C95 450	OUTDOOR ELECTRONIC CONTROL P.C. BOARD		1	1	
20	G	E12 935 374	TERMINAL BLOCK	TB1	1	1	3 P
21	G	E12 823 375	TERMINAL BLOCK	TB2	1	1	3 P
22	G	E12 A87 337	REACTOR	L	1	1	
23	G	E12 935 444	NOISE FILTER P.C. BOARD		1	1	
24	G	E12 935 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	1	
25	G	E12 851 308	THERMISTOR SET	RT61,RT62,RT68	1	1	DEFROST, DISCHARGE, OUTDOOR HEAT EXCHANGER
26	G	E12 935 440	POWER BOARD		1	1	Including heat sink and RT64
27	G	E12 819 233	BACK PANEL (OUT)		1	1	
28	G	E12 817 009	HANDLE		1	1	
29	G	E12 851 515	MOTOR SUPPORT		1	1	
(30)	G	E12 851 936	CAPILLARY TUBE (TAPER PIPE)		1	1	ø3.6 × ø2.4 × 50
(31)	G	E12 853 299	OIL SEPARATOR		1	1	
(32)	G	E12 861 936	CAPILLARY TUBE		1	1	ø1.8 × ø0.6 × 1000

MUZ-GB50VA- E3

13-2. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

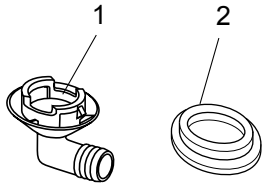


13-2. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part number that is circled is not shown in the illustration.

No.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit	Remarks
					MUZ-GB50VA-E3	
1	G	E12 819 297	TOP PANEL		1	
2	G	E12 851 630	OUTDOOR HEAT EXCHANGER		1	
3	G	E12 938 301	OUTDOOR FAN MOTOR	MF	1	RC0J60-□□
4	G	E12 851 501	PROPELLER		1	
5	G	E12 851 290	BASE		1	
6	G	E12 819 232	CABINET		1	
7	G	E12 819 009	HANDLE		1	
8	G	E12 D84 521	FAN GUARD		1	Including ice guard
9	G	E12 C34 506	COMPRESSOR RUBBER SET		3	3 RUBBERS/SET
10	G	E12 C37 900	COMPRESSOR	MC	1	SNB130FGBH
11	G	E12 D58 661	STOP VALVE (GAS)		1	ø12.7
12	G	E12 D58 662	STOP VALVE (LIQUID)		1	ø6.35
13	G	E12 851 640	EXPANSION VALVE		1	
14	G	E12 D58 493	EXPANSION VALVE COIL	LEV	1	
15	G	E12 D58 490	R.V. COIL	21S4	1	
16	G	E12 C18 961	4-WAY VALVE		1	
17	G	E12 819 650	VALVE COVER		1	
18	G	E12 819 245	SERVICE PANEL		1	
19	G	E12 D58 306	THERMISTOR SET	RT61,RT62	1	DEFROST, DISCHARGE
20	G	E12 D58 309	AMBIENT TEMPERATURE THERMISTOR	RT65	1	
21	G	E12 C34 307	OUTDOOR HEAT EXCHANGER TEMPERATURE THERMISTOR	RT68	1	
22	G	E12 735 241	FUSE HOLDER		1	
23	G	E12 735 382	FUSE	F61	1	T20AL250V
24	G	E12 927 374	TERMINAL BLOCK	TB1	1	3 P
25	G	E12 823 375	TERMINAL BLOCK	TB2	1	3 P
26	G	E12 D58 451	INVERTER P.C. BOARD		1	Including heat sink and RT64
27	G	E12 D58 337	REACTOR	L61	1	
28	G	E12 819 233	BACK PANEL (OUT)		1	
29	G	E12 817 009	HANDLE		1	
30	G	E12 851 515	MOTOR SUPPORT		1	
㉛	G	E12 851 936	CAPILLARY TUBE (TAPER PIPE)		1	ø3.6 × ø2.4 × 50

MUZ-GB50VA
13-3. ACCESSORY



No.	RoHS	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit MUZ-GB50VA-			Remarks
					E1	E2	E3	
1	G	E12 817 704	DRAIN SOCKET		1	1	1	
2	G	E12 444 705	DRAIN CAP		2	2	2	ø33

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

© Copyright 2006 MITSUBISHI ELECTRIC ENGINEERING CO.,LTD
Distributed in Jun. 2011. No. OB455 REVISED EDITION-G
Distributed in Jun. 2010. No. OB455 REVISED EDITION-F 5
Distributed in Apr. 2008. No. OB455 REVISED EDITION-E 6
Distributed in Sep. 2007. No. OB455 REVISED EDITION-D 6
Distributed in Jun. 2007. No. OB455 REVISED EDITION-C 6
Distributed in Apr. 2007. No. OB455 REVISED EDITION-B 6
Distributed in Aug. 2006. No. OB455 REVISED EDITION-A 6
Distributed in Mar. 2006. No. OB455 6
Made in Japan

New publication, effective Jun. 2011
Specifications subject to change without notice.